

Education, work and employment - I

Education, training
and access to the labour market

Jacques Hallak and Françoise Caillods

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Education, work and employment

Volume I · Education, training
and access to the labour market

Jacques Hallak and Françoise Caillods

Jean Duplex
Olivier de Fontmagne
Arya Jalil
Catherine Marry
Ibrahim Musa
Azinar Sayuti
Audrey Chapman Smock



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Preface

Much of the work on which this publication is based has been made possible by grants from the Swedish International Development Agency, the Government of Finland, and the B.M.Z. of the Federal Republic of Germany in support of a programme of studies on "Education, the nature of work and employment" at the International Institute for Educational Planning of Unesco.

Under these sponsorships, a preliminary effort was made by the IIEP to review the existing literature and identify the most promising avenues for research in this field.¹ Among the conclusions of this investigation, two were considered by the Institute as worthy of being taken into consideration in the definition of its programme of studies: (i) the inadequacy of the methods followed in the planning of human resources suggests the need for a particular effort for developing new methodological frameworks or adapting the existing ones; (ii) there is a vast amount of accumulated research work done in this field, and an explicit need for a "bank of knowledge" to be constituted by the publication of specialized monographs on some of the most important aspects. These two sets of conclusions are presented in two volumes. This book (Volume I) is based upon the former conclusions, while Volume II is a contribution which originated in response to the latter.

The present volume contains four studies covering various approaches and having different scopes for studying the problem of access to jobs and the role of education and training as criteria for recruitment.

The first study, on the Metropolitan area of Panama, covers all sectors of activity (except agriculture). It is based on a survey questionnaire administered to 80 companies, the main purpose being to document a key question: What is the firm's demand function for profiles of workers and how has this demand changed over time? In other words, who is the "adequate" person to fill each occupation? and how does the answer to this question vary according

1. See J. Hallak, "Issues and research needs in the field of education and employment", Paris, IIEP, 1975 (mimeo).

to the firm? Other aspects covered by the study are "Mode of recruitment", "Jobs structure", "Wage and income", etc.

The second study, on the two cities of Jakarta and Padang in Indonesia, covers four sectors of activity (hotels, construction, trade and textiles). It is similar in other respects to the study on Panama and deals with the same questions.

The third study focuses mainly on the public sector in Kenya. It consists in an exploitation of existing statistical files (specially on the teaching profession and some specific occupations in the civil service). It discusses the issues of the rationale behind the changes in "Education and career patterns in the public service sector in Kenya". Its key conclusion can be summarized by one sentence, which contradicts some of the accepted propositions in this field: "The basic tension between rapid educational growth and limited employment generation has reduced school leavers' prospects for employment, but it has not given rise to unlimited credential escalation in the public sector".

The fourth study, on a small area in the south of France, consists in a detailed inquiry into a few specific occupations. By studying firms' behaviour (i.e. personnel policy) and conditions of training of workers, through a survey questionnaire administered to half-a-dozen firms and a school questionnaire administered to some training institutions, the report is successful in demonstrating the complexity of interactions between the education system and the world of work. It also raises a number of critical questions on the comparative strengths and weaknesses of various training schools.

This volume is thus the result of a collective effort made in different settings (4 different geographical areas). The four papers contribute to enrich our knowledge of the complex education/work relationships.

Jacques Hallak

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Introduction

Jacques Hallak and Françoise Caillods

Despite all the criticism levelled at them, the traditional methods of planning human resources, for want of a better alternative, continue to be used in many countries. Essentially, these methods consist in estimating the needs for education and vocational training on the basis of an analysis of trends in industry and as thorough a knowledge as possible of employment patterns in the various sectors of activity—the central hypothesis being that there is a correlation between a worker's educational level and the job he performs. However, it is readily acknowledged that this correlation is neither *stable* in time, nor *independent* of conditions in the labour market, nor *limited* solely to the worker's educational background, and that we need to know more about the nature of this correlation.

The studies in this volume start from the assumption that it is possible, by means of a detailed analysis of employers' personnel policies and in particular their recruitment procedures, to test a certain number of hypotheses which would enable one to measure the correlation between education and the world of work and thereby help to improve the methods used in planning human resources. These hypotheses concern in particular:

1. The relationships between the characteristics of a firm (e.g., size, system of production, types of product manufactured, etc.) and its utilisation of manpower with differing qualifications. We were looking for answers to the question: is there a single work-organisation model which corresponds with the technical imperatives of every firm of a certain size in a given sector, or have other (non-technical) factors also to be taken into account to explain the variations observed in the way manpower is utilised?
2. The role of education in providing access to employment. Some view education as a means of imparting occupational skills and as a criterion for measuring a candidate's ability. For others, education is not so much a means of instilling knowledge as a way of selecting the best candidates. If the general educational level of the population rises, employers must then raise the educational standard for recruitment in order to continue to select the best. Other criteria will be used at the same time to filter candidates, e.g., ascriptive criteria (age, sex, state of health). They will be recruited for

a trial period, and then be taken on permanently on the basis of further criteria (aptitudes and abilities) which, in the eyes of their employer, make them suitable as recruits. Is there evidence of a significant raising of the educational levels for recruitment? What is the place of education amongst all the recruitment criteria? Can "cognitive", "ascriptive" and "affective" profiles be defined for different jobs?

3. The way in which candidates are recruited. Is there a structured labour market (e.g. employment agencies, advertisements in the press) in every country or is there evidence of the existence of an "informal market" in developing countries?

The studies which follow do in fact show that it is possible to find some answers to these questions by analysing the personnel policies of employers. However, the prime objective of the studies is of a methodological nature: we have been able to develop and test three different methods of collecting data for an analysis of the recruitment process and the place of education within this process.

The methodology used is described in detail in each of the studies; here we shall do no more than summarise the principle of each method and the scope of the studies.

First method: survey of employers

The survey was conducted on a random sample of firms. The questionnaire was designed to obtain (i) factual data on the nature of the firms, the pattern of employment and its historical trend, and the educational level of the workers; (ii) opinion data on the recruitment criteria for the different job categories, on the "attitudes" and "performance" sought by the employers and on trends in the educational level for recruitment over the last ten years.

The job categories selected covered the entire range of positions within the firm, from unskilled operatives, operatives performing simple tasks, skilled operatives and operatives performing complex tasks up to technical staff and management and including such standard positions as secretaries and accountants.

This method was applied in two case studies: one on Panama and the other on Indonesia. The Panama study exemplifies the case of an outward-directed economy with features which combine those of a developing country in the case of certain sectors (manufacturing and some service industries) with those of a highly developed country (banks, wholesale trade). The survey covered fifteen sectors and was confined to the Panama-Colon metropolitan area.

The features of Indonesia's economy place it within that group of developing countries which are rich from the point of view of mineral resources (oil) and highly populated. Four sectors were covered in the survey: two representative of "informal" activities—trade and construction; one representative of a particularly fast-growing industrial sector, especially in South-East Asia—textiles; and a sector which, in most countries, is somewhat on its

own—hotels. For the sake of convenience, the surveys were conducted in two towns, Jakarta and Padang.

The two studies (Panama and Indonesia) covered some eighty undertakings: such a sample is too large to permit highly detailed interviewing and too small for the figures to be extrapolated in the form of general conclusions. However, as will be seen from the studies themselves, it is possible to draw several conclusions from the results obtained and assess the feasibility of this method of collecting data.

Second method: analysis of data contained in government department records

This does not involve carrying out surveys but analysing the personnel files of government services which, fortunately, generally cover several years and contain fairly full information on the characteristics (educational and other) of the staff employed. What is particularly attractive about this method is the extent of public sector employment in most countries and the low cost of this type of analysis.

The study which illustrates the use of this method deals with Kenya, whose statistical records are fairly reliable. The occupational categories selected, i.e. teachers, secretaries, clerical officers and supervisors, are the most important in terms of their numbers within the public service and are very significant (i) in determining recruitment procedures (ii) in terms of analysing trends in recruitment criteria in relation to the spread of *primary and secondary education* (this is particularly true in the case of teachers).

However, the drawback with studies based on information of this kind is that they cannot examine the interactions in terms of employment between the public and the private sectors.

Third method: monographic studies of several firms and several teaching establishments

These consist of in-depth studies based on data collected by means of "semi-structured" interviews with, on the one hand, those in charge of a firm's personnel policy and, on the other hand, with those responsible for training procedures in some of the special vocationally oriented educational establishments. This approach borders on investigation methods of a socio-anthropological nature; it can therefore be applied only to a small number of firms and educational establishments.

The study on the South of France illustrates the wealth of information which can be collected by this method as well as the scope for analysis which it provides. The study deals with two types of job in the engineering industry sector: welders and boilermakers; the characteristics of the different vocational and technical training streams, the methods of access to these jobs and the relationships between training conditions and working conditions.

The case studies, then, contain examples of the three methods described. The experimental nature of these studies, the limited samples used or the restricted field of enquiry (e.g., public sector only) obviously prohibit any

hasty extrapolation of the results which apply only to those regions, sectors and occupational categories covered in the studies. Bearing in mind this important reservation, we shall now go on to review the main results of these studies under the following two headings: A: An analysis of employment patterns, particularly in relation to the characteristics of firms; and B: An analysis of recruitment policies, dealing separately with the role of education, and a reflection on the functioning of the labour market on the basis of several indicators.

We will conclude with some remarks on the interaction between education and work.

A. Analysis of employment patterns

An employment pattern represents the distribution of a firm's staff by level of responsibility (management, operating functions), by type of activity (management, research, production, marketing) (department) within the firm, and by job (worker, supervisor, secretary). Our hypothesis is that this pattern is a function of: (i) the branch or sector of activity, the system of production and the market; (ii) the firm's size and position on the market; (iii) other factors of a corporate nature, e.g., legal form, degree of autonomy, etc.

In fact, the studies show that there are wide differences in employment patterns between sectors of industry, reflecting different systems of production and levels of technology. For example, the services, and in particular banks and hospitals, employ a far higher proportion of technical staff than industry and, within the industrial sector itself, there are wide variations between a "traditional" sector such as textiles and a "modern" sector such as electricity. Variables other than those of a purely technical kind explain the variations in employment patterns within the same sector. These variables may be either the characteristics of the firm itself—its form of ownership (multinational, public, private, etc.), its type of product, its age, etc., or characteristics to do with its market position (size of the firm, percentage of production which is exported). In the case of manufacturing industry and the banks, for example, the division of labour, the compartmentalisation of functions and the segmentation of jobs into different, separate and hierarchically structured sections are seen to be far more accentuated when the firm is a multinational rather than a public undertaking or private company, a main operation rather than a single firm or a branch, and a large rather than a small firm. This reflects a greater division between planning tasks and operative functions, and a greater desire to control product quality on the one hand and staff performance on the other. In firms such as these the supervisory ratios for management and supervisory staff will be seen to be higher than those in other firms.

All these variables, however, do not act in the same way or are not always meaningful from a statistical viewpoint. Detailed analysis reveals, for exam-

ple, that the statistical correlation between employment patterns and the characteristics of a firm is weak. For example, the ratio of supervisors to operatives does not appear to be linked statistically with any of the characteristics of a firm, not even the sector of activity; the supervisory ratio for senior staff would appear to have a significant correlation (albeit a weak one) only with the size of the firm, its capitalisation, the technology employed, the sector of activity and the type of firm (single undertaking/parent company/branch).

It would seem therefore that, despite the fact that employment patterns vary for example in relation to the sector, the variations within one and the same sector are such that it is not possible to give reliable and significant utilisation coefficients for each sector for a given category of worker (unless other calculations, based on a larger number of observations, show this conclusion to be wrong).

In other words, as far as one can judge on the basis of a limited sample of firms in only two regions of the world (Panama and Indonesia), it would appear that, contrary to what traditional methods of human resource planning postulate, technical coefficients per sector should not be used in calculating future manpower requirements. These amount to average figures which are significant only of the economic structure at a given moment, this structure being determined by the nature of the technology (system of production) and by the typology of the firms in terms of their legal form and type (e.g., private, public, multinational or traditional undertakings). In order to be able to estimate the trend in the employment of human resources, one would need at least (i) to have different employment pattern factors per sector and per type of firm; (ii) to make assumptions concerning future trends in the structure of the economy per sector and type of firm; and (iii) to assess the effects of these trends on the trends in employment patterns.

B. Analysis of recruitment policies

An analysis of the process of recruitment for different job categories produces some interesting results, particularly with regard to the special problem of the entry of graduates and other school-leavers. The case studies in this volume throw some light on this.

1. Firms use different criteria, depending not only on the job category but also on the type of recruitment. i.e., whether it is an initial hiring or, on the contrary, a promotion (internal recruitment). Recruitment criteria may be classified into three broad categories: cognitive criteria, which include the educational level, vocational training, experience, knowledge of a foreign language and results of test; ascriptive criteria, which include not only the candidate's sex, age and marital status, but also his state of health and police record; and affective criteria, i.e., assessment of the candidate's personal qualities and attitudes. A further criterion may be involved which overlaps

the category of cognitive criteria and that of affective criteria, i.e., recommendations—an external recommendation from a previous employer or from some reliable person, or an internal recommendation such as the opinion of a supervisor (foreman or immediate superior). Obviously, certain criteria apply only in the case of an initial hiring, e.g., the police record, or, on the contrary, only in the case of an internal promotion, e.g., length of service or the opinion of a superior. However, one notes that certain criteria are less important in the case of a promotion than they are for an initial hiring, e.g., age and sex (in Panama and Indonesia), state of health and marital status (in Panama).

2. Education is a very important factor in access to any job category. In the public sector in Kenya, each job description specifies the minimum educational level for recruitment, and this is true both for external recruitment as well as for internal promotion. In the latter case the candidate must either have attained the required educational level himself, or have passed a public service examination, or have taken an in-service training course and passed the examination. In Panama education heads the list of all the recruitment criteria for every job category, with the possible exception of foremen (where it is second to experience) and non-skilled operatives. In Indonesia it is the first criterion applied in the case of accountants and the second in the case of management, technical staff, secretaries and foremen. In France the possession of a CAP (*Certificat d'Aptitude Professionnelle*¹) is not perhaps a guarantee of getting a job as a skilled worker, but it substantially increases one's chances (80 per cent of skilled workers hired in the metallurgical sector in the survey region had a CAP).

This statement needs however to be qualified by two comments:

(i) The educational level is not the decisive criterion for every job category, e.g., in Indonesia it ranks only third in the case of skilled workers and is not a very important criterion for unskilled workers. In Panama it is a criterion of little importance when it is a question of recruiting an unskilled operative or promoting him to a job as a skilled operative. In the public sector in Kenya the educational level is not specified in the case of recruitment for "junior" posts and the various ministries are free to choose from their waiting lists. Lastly, in France a certificate is of varying importance depending on the specialisation, e.g., it is not very important and even perhaps the opposite in recruiting someone for a welder's job—other criteria are more important, i.e., a "knack" which is judged on the basis of experience and by means of a test.

(ii) Education is a criterion which is accorded less importance for an internal promotion than for an initial hiring. This is true, without exception, for all the job categories in Panama. In the case of skilled workers in France the authors note that whereas 80 per cent of skilled workers on initial hiring have

1. Certificate of professional proficiency.

a CAP, this is true of only 45 per cent when all forms of recruitment are considered. For teachers in Kenya, obtaining the certificate required by the regulations was a guarantee of promotion to a higher grade; since 1975, however, promotion to a higher grade is only on the basis of merit and the inspector's recommendation.

In Indonesia the position is perhaps less clear-cut, since for certain jobs education is still more important in the case of a promotion than in the case of an initial hiring. This is true, for instance, for management or for skilled workers (in view of the very low standard of unskilled workers, education becomes a very important criterion when it comes to promoting them to the skilled level).

3. The other cognitive criteria, experience and vocational training, also play a very important role in recruitment for the different job categories. It is interesting to note in this connection that experience is put at the top of the list (first or second position) by every firm for every job category (with the possible exception of the public sector in Kenya); it would seem that no company wishes to bear the expense of being the first employer and providing the initial on-the-job training; employers prefer to recruit candidates who have already been trained elsewhere; this to some extent offsets the importance given to education: nothing is better than training on the job and the acquisition not only of professional know-how but also of proficiency at a specific task. But then, in this case, who recruits the school-leavers? In fact, either firms are unable to allocate the importance they would like to experience or school-leavers have, as a result of various training periods in industry during their school career, been able to acquire some initial practical experience. This point merits further consideration and in-depth research on account of its implications for planners in the field of education and vocational training.

On the other hand, it should be noted that, at least in Panama and Indonesia, vocational training plays a less important part in recruitment than education. This may be due either to the absence of a good system of organised vocational training (in contrast to the situation in France, where a highly sophisticated system exists with various streams, and the public sector in Kenya), or simply to the fact that firms feel that this is less valid than on-the-job training.

4. The ascriptive criteria play a far from negligible part in access to certain jobs. Even in the Kenyan public sector's highly formalised system, there are quotas by sex and by region for the recruitment of teachers. Under this quota system it is, or was, possible to recruit candidates with a standard of education lower than that required; by the same token, it is generally accepted that secretarial posts should be filled by women whilst the middle-level office jobs (e.g., book-keepers, statisticians, employees in the personnel department, etc.) should be filled by men. In this case the ascriptive criteria take precedence

even over the educational criteria. In Panama the police record, age and state of health are the primary criteria used in recruiting an unskilled operative—the state of health is a very important criterion for all job categories (it is regarded as an indication of the risks of absenteeism), as are also age and sex (the latter invariably in the case of secretaries), and the police record in the case of accounting and supervisory staff and management. The same situation applies in Indonesia.

5. The recruitment process generally comprises two phases: (i) the selection of candidates “on their record” and “by interview” followed by a period of trial employment; (ii) monitoring of the recruit’s performance over a period of up to nine months before making his appointment permanent. In fact, with every job category, employers associate a profile in terms of attitudes which corresponds to the employee’s position within the organisation. The Indonesia study is a good example of this. Management is expected to have initiative, leadership ability, authority, integrity and a sense of human relations. In other words, a manager is expected to identify with his company. A foreman or supervisor is also expected to have authority, a sense of human relations, integrity and reliability, but in addition he has to be punctual and rarely absent so as to give a good example. A secretary will be required to be punctual and disciplined. The skilled or unskilled operative is expected to have all the traits and performance required are just as contrasted and of a similar kind for the same category of job. In the case of the skilled workers in France, they are not hired permanently until after a two- to three-week trial period, sometimes followed by a three- to six-month contract, during which time the employer is able to assess the worker’s performance, particularly in terms of his record of absenteeism, his motivations and his ability to get on with people. In the public service sector in Kenya these criteria are not stated explicitly, but the widespread use of internal promotion to fill certain posts means that an assessment has been made of a candidate’s qualities, e.g., the “executive quality” of a personal secretary.

If one had to draw a conclusion from these initial results despite the limited nature of the samples in terms of countries, firms and job categories, one could say that this all seems to suggest that employers have standard profiles for the various job categories—profiles which are composed of cognitive, ascriptive and affective elements. The cognitive and ascriptive variables serve to filter those candidates who are the most “suited” to the various jobs, but the final selection and decision to hire are based on performance data, or rather on the opinion the employer forms of the candidate’s qualities. The importance of recruitment via internal promotion, or by recommendation (Indonesia, Panama, Kenya), or after a trial period (France), or even from specific schools (Kenya, France) is to a large extent explained by the

employer's need to be certain that he is recruiting people who have not only the requisite professional capabilities but also the necessary attitudes and behaviour. These profiles will vary from one job category to another. The employer is looking for maximum efficiency for a given function, and this will be related to standard of education and experience in the case of management and technical staff, to length of service in the case of foremen, and to state of health, age and police record in the case of the unskilled operatives.

We have ranked education as one of the criteria enabling a pre-selection of candidates for a job. Certain authors in fact hold the view that education acts essentially as a filter for separating out the most talented elements, and is used as such by employers rather than as an indicator of a level of professional qualification. This is what is commonly termed the "screening" theory with its variant "credentialism". The continued rise in the educational levels required for recruitment for every job category, resulting from the expansion of educational systems, is regarded as being the main proof of credentialism. Confronted with the swelling tide of graduates, employers are obliged continually to raise the educational level of their recruitment in order to maintain the same level of selection without there being any real change in job content. If such were the case, the expansion of educational systems would not necessarily lead to an improvement in productivity and thus promote the economic development of the countries concerned, but would primarily mean providing employers with a more highly qualified and cheaper source of manpower. What can be learnt from the case studies in this connection?

Indonesia, over the past seven years, has seen a rise in requirements in terms of standards of education for every job category with the exception of management: a rapid rise in the case of middle-level categories of job, i.e. secretaries, supervisors and skilled personnel,¹ and a slow one for other job categories. Employers' requirements for vocational training have also increased in all occupations except skilled workers.

In Panama requirements have risen since 1970 for every level from unskilled operatives to management staff. In the case of skilled operatives, however, this has primarily involved a switch of employers' preference away from general education and towards technical education. Here, as in Indonesia, firms demand more and more vocational training even if this is, on the whole, still fairly limited.

Kenya, since independence, has seen a rise in the educational levels for recruitment for every category of job, particularly those at the lower end of the scale: primary school-teachers, typists and clerical officers. The educational requirements have increased little or not at all for middle and senior-level posts, e.g., secondary schoolteachers, typists/secretaries and senior clerks. In contrast to this, however, there is evidence of a demand for an increasingly specialised and high-level vocational training for every type of job.

1. Except in manufacturing industry.

In France the level of vocational training required for skilled workers has not really changed but, as a result of raising the school-leaving age, candidates' standard of general education has risen. In practice, the raising of the qualification for access to vocational training, in terms of the number of years' schooling required, has resulted in a drop in candidates' average level of qualification. In fact, previously, those entering vocational training were the best of the less-able candidates (i.e. for the most part, those who were not eligible for the second cycle) whereas today it is those with the least ability. (It should also be pointed out that at the bottom of the scale are the real failures from vocational training and the first general cycle).

With regard to technicians, there is evidence of the rise in the educational level for recruitment since firms are now recruiting school-leavers who have received a second-cycle secondary technical training or first-cycle training at a college of technology rather than upgrading skilled workers who deserve promotion.

It is not easy to draw a conclusion from these few examples. There has in fact been a general rise in the standard of education required for jobs (wherever this was possible in view of the increase in the graduate supply or the standards of education already required, i.e., close to the maximum). However, it is possible that this raising of standards was designed to close a gap in the work-force's level of qualification or satisfy a real increase in the professional qualifications required as the result of changes in the production process.

If one takes as an example the teaching profession in Kenya, this was indeed a matter of closing a definite gap and raising educational standards which, at the time of independence, had been set too low in response to the requirements of the moment. Certain job categories are however exceptions to this; e.g., for all the "non-scale" unskilled jobs there has been a considerable rise in the standard of education, although there has been no corresponding change in the requirements laid down—simply as the result of the surplus supply of certificated school-leavers; the post of clerical officer, which formerly could be filled by someone with a primary-school certificate and where promotion depended on length of service, is no longer accessible to those who have not their O-levels or even their A-levels.

In Panama it would seem that "credentialism" is at work, since the standard of education required increased considerably whereas the number of firms insisting on special training has shown little change: in 1977 25 per cent of firms required secondary education for an unskilled operative's job and 49 per cent for a skilled operative's job, whereas only 28 per cent required technical education or vocational training for these same jobs.

In France credentialism would not seem to apply, at least not in the case of skilled workers' jobs. In fact it would seem that firms attempt to recruit for such jobs at the lowest educational levels, e.g. by internal promotion of workers with no academic qualification. The rise in the educational level would therefore seem to be the result of twin phenomena: (i) an increase in

the basic standard of education of the population as the result of raising the school-leaving age (supply push); (ii) a raising of the educational requirement for middle-level jobs (technicians, office-workers, etc.) diverting those who have not the required qualifications towards the lower end of the scale (demand pull).

The foregoing observations concerning recruitment criteria provide particularly meaningful information for an understanding of how the labour market operates. We have in fact been able to put forward several hypotheses regarding the interaction between the supply of and demand for manpower on the basis of an analysis of the part played by certain criteria (age, sex, education) in permitting access to various categories of job. However, in order to go beyond this, one needs to supplement this analysis of the recruitment process by an investigation of the sources (or methods) of recruitment and attempt to determine the effect of various factors on the distribution of earnings. We can examine two variables: firstly, the sources of recruitment and secondly, the factors determining wages and salaries.

1. Sources of recruitment

In developing countries such as Indonesia and Panama the labour market is unorganised and non-structured, i.e., employment agencies exist but employers rarely make use of them and advertisements in the press are the exception rather than the rule. Employers no doubt have no faith in the information supplied (by the employment agency, in Panama) and prefer to make their own assessment, directly and indirectly, of the qualities of the people they recruit; they use other sources of recruitment—internal recruitment, recommendations, and recruitment from certain, very specific, schools. In Panama and Indonesia recruitment via internal promotion is very important, as is recruitment by recommendation in the case of posts which are generally filled by external recruitment: technical staff, executive secretaries, skilled and unskilled operatives. For jobs at the lower end of the scale, firms have their own "employment agency"—a sort of waiting-list of candidates which they make use of whenever necessary. In Kenya the public sector in the majority of cases uses either internal promotion or external recruitment of school-leavers; however, in the latter case, the provision of pre-service training, combined with a five-year commitment ("bonding"), means that the most suitable candidates can be not only recruited but also retained. The labour market is therefore not fluid and the possibilities of switching from one firm to another are limited. Speaking fairly generally, one can put forward the hypothesis that, in the case of jobs at the lower end of the scale, e.g. the unskilled worker, "seasonal worker" or "day labourer", the source of recruitment is becoming largely informal—in industrialised countries as well as in developing countries. (As proof of this, one needs only to see the workers lining up outside factories or work-sites in European countries). Similarly, positions at the top end of the scale, i.e. "management" (but not, with few

exceptions, technical or administrative staff), are filled in most countries via an "informal" market.

In the light of these observations we can make some tentative comments on the existence of different stratifications of the labour market:

(a) Stratification between firms. There are different labour markets: one for the multinationals, that of the public sector, one for the medium-sized private undertakings and one for the traditional sector; each has its own rules for recruitment and promotion and its specific career patterns. These markets, however, are not completely independent of each other; the teaching profession in Kenya is a good example of this—it has provided a reservoir of skilled manpower for the rest of the public sector and the private sector for the "Kenyanisation" of cadres—the fluctuations in the number of qualified teachers available can be explained by the variations in the demand for skilled manpower in the other sectors.

(b) Stratification within firms. Not only is there stratification between firms but also within firms—recruitment via internal promotion provides some employees with the possibilities of a career but these possibilities are not unlimited: the unskilled worker can become a skilled worker and, with a little luck, a foreman, but those who can gain access to positions as technicians, even middle-level technicians, are rare. Take as an example the two categories of workers analysed in the study on France: a welder has the possibility only of "horizontal" promotion, i.e., a good worker can expect to progress within his skill only by performing increasingly complex and better-paid tasks without changing his category; the boilermaker, on the other hand, has the possibility of vertical promotion, but this possibility is a limited one: the best boilermaker may progress up the ladder perhaps to a position in a drawing office, but he will not go any higher.

In the case of the industrialised countries it will be noted that job stratification, rather than diminishing, tends to become more pronounced as the result of a two-fold trend: on the one hand, the revision of job patterns and the increasing division of labour which is tending increasingly to separate job functions and, on the other hand, the development of the educational system and the emergence of new qualifications. The study on France provides an illustration of this: it would appear that the skilled boilermaker's means of access to a job in the drawing office are becoming increasingly restricted. This is the result, firstly of technological progress and the need to be familiar with more advanced techniques—which means that firms have to rely upon qualified technicians—and secondly, of the effect of this on the division of labour and the fact that many firms are beginning to sub-contract design work to outside services. To a certain extent the experience in Kenya confirms this theory: it would seem that, as a result of the increasing numbers of qualified students produced by the secondary schools, the public sector has been able

to raise its educational requirements to the point where internal promotion to the post of clerical officer is no longer possible.

It is apparent from these few examples that jobs at different levels are tending to become increasingly segmented, partly as the result of the expansion in the educational system. There is no doubt that the acquisition of an educational qualification is still one of the best means of access to higher-grade jobs, and this tends to prove that education is a powerful means of equalising the chances of access to the different categories of job. However, one is justified in thinking that (i) the gaps between those who have an increasingly higher standard of education (and therefore access to better jobs) and the others are going to widen or at least persist; and (ii) that the increasingly pronounced pyramidal form of the hierarchy and the increasing division of labour will make it increasingly difficult to move from one segment to another and the choice of one's first job will be absolutely crucial in determining the pattern of one's professional career—whatever the worker's standard of education.

2. Some elements concerning the factors determining salary levels

Numerous attempts have been made to explain salary levels and the econometric models used to do this have, over the past twenty years, been continuously improved upon and have become increasingly complex. As the result of the interest shown by researchers and the resources allocated to research on incomes policy, it has been possible to carry out large-scale surveys, involving a large number of observations, where one has been able to make highly detailed statistical analyses and test the different theories held by the experts on the labour market and the role of education in determining incomes.

In the modest context of the Institute's surveys, which moreover touched upon wages and salaries only in an incidental manner, it was never our intention to analyse this aspect in detail, except perhaps to take advantage of the fact that we possess detailed information by "job category" on the characteristics of firms as well as the more usual data on the characteristics of the workforce. Because of the small number of interviews we were obliged to use very simple mathematical models (linear regressions), and the results which follow should be treated with caution.

In Panama the differences in salaries at the management level appear to be closely related to the differences in the characteristics of the individuals (education, professional training) and averagely related to the characteristics of the firms or the working conditions (measured in terms of the average number of hours worked per week). In contrast to this, the differences in skilled workers' wage levels appear to be closely related to the firm's characteristics, slightly related to the characteristics of the individuals, and very little related to the working conditions (number of hours worked). In other words, the number of years' schooling has a comparatively closer correlation with differences in earnings at management level than it does in the case of

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operatives, and the dispersion of wage-levels between firms is much wider in the case of workers than in the case of management.

In Indonesia, the results are different, and one finds that management salaries depend mainly on the characteristics of the firm and to some extent on the individual's characteristics; skilled workers' wages depend primarily on their standard of professional training and very little on their standard of general education or the characteristics of the firm; and unskilled workers' wages depend primarily on their standard of general education.

What can be said about the conflicting results from Indonesia and Panama? Firstly, that these should be verified on larger samples so as to ensure that the statistical coefficients are reliable. Secondly, there are, no doubt, marked differences in the "structure" of the samples of firms and in the wages policy of each country. Lastly, the differences in the characteristics of the workers and in particular in their standard of education may explain these conflicting results: it so happens that the educational level of unskilled operatives is very low in Indonesia (which is not the case in Panama) and the fact of being illiterate or not has a considerable influence on wage levels; the situation could well change once the majority of unskilled workers have a minimum level of education as in Panama.

The study on Kenya demonstrates the effect that the supply and demand for qualifications has on wage and salary levels even in a sector supposedly as rigid as the public service. One notices in fact that, for every job category, the lowest grades are those where the standard of education required has risen most rapidly and yet these same grades have been awarded the smallest wage increases. Teachers are the only exception to this and, in their case, the least qualified amongst them were the ones to receive the largest salary increase; it should however be mentioned that this applies to levels of qualification at which there is no longer any recruitment and, numerically, they are no longer very important.

On the whole, and bearing in mind all the reservations mentioned earlier, the raising of the educational standard would seem to have had the least effect on the job categories at the lower end of the scale and have produced the most substantial increases in salary at the higher end of the scale. On the basis of this, it is impossible to state whether an increase in education does or does not bring about a reduction in salary differentials and a fairer redistribution of income; but one can find some arguments to support the negative alternative and confirm the earlier hypothesis of a stratification of the labour market.

If the goal of educational planning is not simply to ensure the perpetuation of the present social system and satisfy as precisely as possible the requirements of the productive system, but rather to attempt to introduce the conditions for change and for economic and social development, then one must take a close look at the relationships between the system of education and the system of production. What part should the educational system play in the changing economic and social scene? What impact do changes in the

system of education have on the structures and methods of personnel management in industry? In other words, what are the relationships which exist between the world of education and the world of production? Is it merely a situation where the educational system is dominated by the productive system (i.e. education is geared to the requirements of the system of production and the productive system imposes its norms on the educational system)? Or does the educational system possess complete autonomy and develop in accordance with its own norms and its own objectives? Or, what is most probable, is there interaction and interdependence between the two systems affecting the way each one of them operates?

This classification of the relationships between what are two institutions within the social system, i.e., education and industry, in terms of "domination", "autonomy", "interaction", is far too simple to provide the basis for a satisfactory description of the problem. However, despite its somewhat ingenuous character, this classification can serve as a framework for interpreting the complexity of the relationships between the educational system and the productive system. The analysis can take the form of a comparison of the historical evolution of both systems and an examination of how each of them functions.

The historical analysis may show how the development of one can affect the development of the other. Although the Kenya study was confined solely to the public sector, it does illustrate the complexity of these relationships and their evolution over a period of time. In very simple terms, it can be said that, after independence, the educational system developed very rapidly in order to satisfy the economic requirement for skilled manpower and the need to train local executives—thereby demonstrating relationships of correspondence with the productive system. The number of school-leavers increased sufficiently to enable qualification levels for all professions—including teaching—to be raised significantly. The following facts can also be considered as indicative of a relationship of domination of the educational system by the productive system: (i) the setting-up of specialised, high-level institutions solely to train staff for the public sector or, as opposed to this, the closure of certain streams once the public sector stops recruiting from them; (ii) the lack of comparability between teachers' salaries and those in the rest of the public sector and, above all, in the private sector—which led to difficulties in recruiting and, even more, in retaining skilled staff, and pressures to increase teachers' salaries. However, the situation gradually changed, giving way to other types of relationship: the system of education began to develop in an "autonomous" fashion and supplied more qualified school-leavers than the system of production required—with the result that unemployment began to occur amongst secondary school-leavers and even graduates. Relationships of interdependence have also existed for a long time with regard to the method of recruiting staff. For example, the educational system was the first to nationalise its staff, and this had the effect of drawing all the other sectors along with it, even if only by providing a reservoir of qualified local man-

power. More recently, the teaching profession has become one of the most rapidly developing sectors of salaried employment, absorbing a far from negligible number of school-leavers. As a result, the conditions of recruitment and the method of promotion in these professions are likely to influence recruitment conditions in the other sectors.

However, the interaction between the educational system and the productive system should be measured not only by the effect of the development of the first on the second but also by an analysis of how these two systems function. In particular, analysis of industry's methods of operation must be complemented by examination of how educational establishments operate.

The study on France, for instance, demonstrates in the case of the two categories of worker, how employers rate training backgrounds differently in relation to the skills involved. Stating this in somewhat simplified terms: the "technical" requirements of the job tend to make employers prefer school training (CET—technical secondary school) in the case of boilermakers—a speciality which requires a good general and theoretical training as well as knowledge of the trade—and post-school training (FPA—adult professional training) or even on-the-job training in the case of welders, who need primarily to acquire the "knack". The educational system reacts to these requirements by diversifying its own training streams, in which it enrolls students of very different levels. It selects and orientates students in accordance with its own standards, which give precedence to theoretical and general training (even going as far to orientate the better students from technical and vocational training towards specialities which are not greatly sought after on the labour market—a relationship of independence). By so doing, it will create a right from the selection and orientation of students, will be accentuated by the teaching methods used in each stream and by the type of teacher assigned to it (in terms of his type of training, possibilities of promotion, retraining); the wide variety of these training streams will strengthen the divisions and hierarchies created by the productive system. The division of workers into relatively watertight categories is thus as much the result of the way firms are organised and their technical requirements as it is of the way in which workers are orientated and trained within the educational system.

What conclusions can be drawn with regard to educational planning?

One can attempt to match training and employment more closely. The study on France leads to the conclusion that the most suitable training for boilermakers is school training but that, in the case of welders, by far the most suitable training is post-school training or even on-the-job training. The Kenya study also highlights a contrasting trend in the public sector, when one compares the conditions of eligibility for posts such as teachers (school and university training) with the higher grades of clerical officer or secretary, i.e., experience or performance (which would result from "on-the-job training"). The studies on Indonesia and Panama, although their analysis of job catego-

ries does not go into such depth, show that for certain of these formal professional training is not required, whilst for others it is considered very desirable by employers.

To accept this conclusion and its consequences in terms of the methods of training to be developed would therefore mean:

1. Adopting the very narrow definition of qualification as used or imposed by firms or collective-bargaining agreements in the public and private sector—in other words, adaptation to a specific post ignoring, for example, in the case of the welders in France, any possibility of promotion or even reclassification once the worker has reached the age of 40, when he is no longer suited to certain tasks. In the case of the skilled and unskilled workers in Indonesia and Panama, and in the case of the lower grades of public service employees in Kenya, this would amount to the very short “on-the-job” training given to primary school-leavers or illiterates, who will not be able either to change their jobs, if the situation on the labour market were to change, or hope for vertical promotion over the course of the years.
2. Forgetting that the educational system already bears part of the responsibility for the demarcations within the productive system. By virtue of the hierarchy of specialisations which education produces—a hierarchy between the training given to engineers, technicians and skilled workers—and the widely differing forms of training it provides for the same level and the same speciality, it helps to widen the differences between management work and operating functions and confine workers within very specific and very narrowly defined job categories; whereas, in theory, the role of education is to create a modern workforce capable of adapting to technological progress and promoting social change.

In other words, the crux of the debate concerns the criteria for developing a modern workforce and comes down to the question of whether it is enough simply to increase the correspondence between training and work—which could lead to the dilemmas mentioned earlier—or whether, on the contrary, one should maximise the choices and the individual's occupational mobility by putting the emphasis on a very wide general training which would enable him to move freely from one activity to another. The theory of credentialism does at least emphasise the fact that the deliberate or uncontrolled expansion of the educational system is not the incontrovertible answer to the problem of training a modern workforce. It all depends on the social, political and economic context involved.

No doubt, the final conclusion which these studies suggest is that even when we have gained a more thorough knowledge of the social context and, in particular, of the interactions between education and employment, even when the objectives of the educational and productive systems have been fixed, and even when society's needs for skilled manpower have been estimated with the greatest possible precision, we will still have to accept discontinuities between future projections and real events.

Education, work and employment in Panama

Jacques Hallak and Françoise Caillods

in co-operation with IFARHU and RED (Unesco)

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This study was carried out in co-operation with the Human Resources Department of IFARHU (Panama) and the RED Project for the Countries of Central America (Unesco).

Introduction

The purpose of this study is to analyse the relationship between the system of production and the system of education in Panama through a survey of employers' personnel policy—a policy which is characterised in various ways (i.e., by firms' occupational structures, by their recruitment methods and criteria for different occupations, and by the working conditions and pay-scales for different jobs) and which is indicative of the role assigned to education by the world of work and of the employers' demands in this connection. An awareness of these demands and the way in which they vary in relation to the characteristics of a firm, and an understanding of the forms of interaction between the system of production and the system of education, are essential to the planning of education.

This study, which is based on a sample of 85 firms in Panama-Colon, is primarily methodological. It does however provide several relevant conclusions with regard to Panama's education policy for the future.

The analysis of employers' policies must be seen in the general context of the economic and social conditions of the country in 1977. Chapter I is devoted to an assessment of the main features of Panama's development over recent years and its effects on education, work and employment.

Chapter II analyses the way in which the characteristics of an undertaking affect occupational structures and the way human resources are utilised. An attempt is made to construct a typology of undertakings combining technical characteristics (sector, technology, size), social characteristics (status, type, capitalisation) and the various forms of work organisation.

Chapter III examines the criteria employers use when recruiting or promoting to various posts and, in particular, the importance of education in relation to other ascriptive criteria (age, sex, health) and to non-cognitive criteria. This is followed by an analysis of the behaviour expected or the qualities required for different occupations and concludes with a definition of industry's labour demand function.

Chapter IV considers how an adjustment is made between the wishes of employers (the profiles required for different occupations) and the practical limits of the supply, in so far as this can be assessed by analysing the

characteristics of occupations (i.e. the different methods of recruitment, the different types of manpower actually employed, the degree of unionisation, the different methods and levels of remuneration).

Lastly, the conclusions comprise a series of reflections on the relationship between systems of education and systems of production and the likely outcome of various educational strategies.

Scope of the survey and sample structure

For obvious reasons it was not possible to cover every undertaking in Panama: the scope of the survey was limited geographically, in terms of sector of activity and in terms of the size of the establishment.

1. Scope of the survey

The towns of Panama and Colon occupy an extremely important place in the country's economy and employment. The survey was therefore restricted to undertakings located in these two towns: in fact, Panama and Colon together account for 74.8 per cent of the undertakings with more than 5 employees in the manufacturing industry sector (81.6 per cent of workers in this sector), 77.6 per cent of the trading establishments (83 per cent of workers in this sector) and 82.5 per cent of service undertakings.¹

In addition, a specific feature of Panama's economy is the preponderance of the tertiary sector (trade and services), which employs almost 50 per cent of the workforce. It was therefore natural to concentrate our analysis on these sectors, excluding however public administration. None the less, it was decided that the industrial sector should not be totally excluded from our survey. The three major industries were therefore included in our sample, i.e., the food industry, clothing and footwear (these two sectors account for 49.9 per cent of the firms and 51.3 per cent of the workforce in manufacturing), water and electricity.

Finally, we limited the scope of our survey to undertakings of an adequate size: more than 50 employees in the case of industry, trade, transport and banking, and more than 30 employees in other services, which includes hotels and restaurants. This implied a fairly serious limitation of the survey universe—particularly since in Panama most undertakings have less than 20 employees—but it ensured that it would be possible to make a meaningful analysis of occupational structures and recruitment methods for certain key occupations.

The universe which we chose to study is, by and large, representative of the modern sectors of activity in the metropolitan area of Panama and excludes the non-formal sector and the very small, self-employed type of

1. Not including establishments in the financial, transport and health sectors, which are probably even more highly concentrated in the metropolitan area.

businesses. No doubt, such businesses are a very important part of the economy, but they would need to be studied in a somewhat different manner, using other methods of analysis.

Once the survey population had been defined, we drew up a complete list of undertakings by size and by sector based on data for 1970¹ and selected our sample on a one-in-two basis.

2. *Survey method*

The data were obtained by means of a survey carried out in April-May 1977 on 85 undertakings, using a questionnaire technique. The survey was conducted by a team from IFARHU and the Ministry of Labour; each contact involved several visits (two in most cases: the first to collect data on the structure and personnel policy of the organisation and the second to collect the more elaborate data dealing with the occupational distribution and the workers' educational level). The questionnaire was aimed primarily at the managing director, the personnel manager or the administrative manager. The attitude shown towards the survey was generally fairly favourable and levels of non-response were low.

The questionnaire (reproduced in Appendix I) is basically in three parts: a first part identifying and providing a general description of the undertaking with data such as the type of organisation, its status, date of establishment, financial data, production techniques (in the case of industry) or method of operation (in the case of trade and service establishments), its market, etc. In the second part, the employer was asked to define in his own terms the occupational structure within his organisation by department and by occupation for the years 1970 and 1977 and to provide an age breakdown by occupation for 1977. The third part deals with several key occupations within the organisation: in every case we chose (a) an operative function—workers in an industry, the sales staff in a retail establishment, the drivers in a transport company, the junior nurses in a hospital, etc.;² (b) a supervisory function (production, sales, traffic... depending on the sectors), secretaries, book-keepers; (c) one of the "professional" occupations (only from those in water, electricity, financial establishments—banks and insurance companies—and hospitals), representatives, insurance agents, real estate agents; and (d) an occupation at management level. For every occupation selected (five or six depending on the undertaking) questions were asked on the number of employees by sex, method of recruitment, method of remuneration, number of hours worked, union membership and wage and salary rates in relation to the reference occupation. In addition, employers were asked to state the criteria used when recruiting or promoting personnel (ascriptive criteria, cognitive criteria, attitudes) as well as the required and actual education level of the workers.

1. Source: Census of industrial, trade and service establishments carried out in 1970 by IFARHU as part of the national survey on vocational training needs.
2. See "Selection and codification of standard occupations" in the Methodological Appendix.

So as not to overburden the survey, there was no direct interviewing of the workers themselves.

3. Sample structure

The structure of the sample in terms of the number of undertakings per sector and the number of employees is given in Table 1.

TABLE 1. 1977 sample: number of undertakings and number of employees.

	Number of undertakings	Percentage of sample	Number of employees	Percentage of sample
<i>Industry</i>	21	24.7	7 431	50.4
— Food	8	9.4	1 959	13.3
— Clothing	9	10.6	1 325	9.0
— Water, electricity	4	4.7	4 147	28.1
<i>Trade</i>	24	28.2	1 969	12.7
— Wholesale	16	18.8	1 300	8.8
— Retail	8	9.4	569	3.9
<i>Services</i>	40	47.1	5 449	36.9
— Transport	6	7.1	1 005	6.8
— Hotels	10	11.8	1 066	7.2
— Banks	5	5.9	1 464	9.9
— Insurance companies	4	4.7	345	2.3
— Health	3	3.5	827	5.6
— Repairs	4	4.7	368	2.5
— Laundries	4	4.7	130	0.9
— Other services	4	4.7	244	1.7
<i>Total</i>	85	100.0	14 749	100.0

In total, the survey covered 13 sectors and 85 undertakings: 21 industrial undertakings (i.e. 24.7 per cent of the sample), 24 trading establishments (i.e. 28.2 per cent of the sample) and 40 service undertakings.

The 85 undertakings totalled 14,749 employees in 1977. Water and electricity accounted for 4,147 employees, 28.1 per cent of the total sample—in fact, two of the undertakings in the sample have more than 1,000 employees. These are followed by the food industries and the banks with respectively 1,959 and 1,464 employees. The smallest sector in terms of number of employees is laundries—small-sized operations are in fact typical of this sector.

A comparison of the sample with the total of non-agricultural undertakings in Panama shows that:

— in relation to the universe selected for study, the sample covers 50 per cent of the undertakings, 59 per cent of the workforce employed in industry, 30.3 per cent of those employed in trade and 49.1 per cent of those employed in services;

- within the industrial sector as a whole, it covers only 6 per cent of the undertakings in the Panama-Colon area or 5 per cent for the country as a whole, but a more important proportion of the workforce, i.e. 24 per cent for the Panama-Colon area or 19 per cent for the country as a whole. In the trade sector, it covers only 3 per cent of the establishments in the Panama-Colon area, or 2.3 per cent for the country as a whole, i.e. respectively 10 per cent and 8 per cent of the workforce. In the case of the service sector, it covers only 7.6 per cent of undertakings in the Panama-Colon area, or 6.1 per cent for the country as a whole, i.e. respectively 31.6 per cent and 25.9 per cent of the workforce.

On the whole, despite the small number of undertakings interviewed, the sample can be said to cover a fairly significant proportion of Panama's labourforce. In any case, it is representative of large and medium-sized undertakings in the most important sectors of economic activity in Panama.

I. Panama's economy in 1977

The purpose of this section is to provide a brief review of the economic situation in Panama over the last ten years, highlighting the critical factors—obstacles, difficulties and constraints—in the country's development and the consequences of these on education, work and employment.

For any careful observer of the Panamanian scene, the country's economy can be characterised by its extreme vulnerability as the result of its reliance for its export earnings on a few products and two or three export markets, together with the wide disparity between the economic, demographic, social and political "weight" of the capital and the metropolitan zone, i.e. the "centre", in relation to the rest of the country, i.e. the "periphery".

In order to highlight these features, we shall examine in turn the part played by the main sectors of activity in the growth of the economy; relations with the outside world, whether in terms of the exchange of goods and services or transfers; the labour and employment scene; and the special position of the metropolitan area, as well as some indicators of inequality.

A. Economic growth

During the course of the past ten years the Gross Domestic Product has increased in real terms by 73.1 per cent, an average of 5.6 per cent per year, with a higher average growth rate of 6.4 per cent being recorded during the five-year period 1971-75. There was considerable variation in the trend from one sector of the economy to another: the annual average growth rate was 2.9 per cent for agriculture; close to the average and ranging between 5 and 6 per cent for manufacturing industry, "construction", "trade" and "service industries";¹ on the other hand, very high growth rates for transport and communications and "electricity, gas and water" (between 11 and 13 per cent per year); and in the case of financial institutions (banks and insurance companies) an average of more than 13 per cent per year. These contrasting trends have, in the space of ten years, considerably altered the physiognomy

1. Excluding the Canal Zone.

of the country. The position of the agricultural sector has dropped from 21 per cent in 1966 to 16.2 per cent in 1975, whereas transport has risen from 5.5 to 8.8 per cent and banks and insurance companies from 2.8 to 5.7 per cent; the other sectors have more or less kept their position, i.e., 15 per cent for manufacturing industry (as against 16 per cent in 1966), 13.3 per cent for trade (as against 13.8 per cent in 1966), 31 per cent for service industries (as against 32.4 per cent in 1966).

Thus, despite these trends, it will be seen that the economy is based mainly on three sectors, i.e., "agriculture", trade and the service industries (including banks), which together accounted for 66.2 per cent of GDP in 1975.

Agriculture, stockbreeding, forestry and fishing. In Panama, as in several countries in this region, there are two conflicting types of production: "subsistence" production of the classic kind, and mechanised production, highly capital-intensive, geared mainly to export markets and centred on the *latifundia*. This explains the migration to the towns, the dispersion of the rural population (80 per cent of the rural communities have less than 100 inhabitants) and the prevalence of large farms—the 1971 agricultural census showed that 7.9 per cent of farms were over 100 hectares and owned 45.6 per cent of the farmland!

The banana plantations form the most advanced and most highly mechanised sector. Growth was particularly rapid between 1966 and 1969 and resulted in a considerable increase in export earnings (the industry's earnings amounted to B 61 million in 1969, i.e. 56.3 per cent of total export earnings!) and a substantial proletarianization of the labour force; this was followed by a certain levelling-off for this sector, judging by the figure for export earnings which has remained stationary in the neighbourhood of B 60 million up until 1975. One can easily imagine the difficulties—in terms of jobs and earnings—for the 15,000 or so workers and their families relying for their livelihood on a sector which is highly dependent on export markets.

Stockbreeding, which is the least dynamic activity in the sector of agriculture and animal husbandry, with a very modest growth rate, has known mixed fortunes: up until 1969-71 rapid expansion, growth in the amount of pastureland (more than 50 per cent of farmland), injection of capital in the form of bank loans and substantial technological improvement; since that date, an almost complete lack of growth in the number of livestock.

Fishing (seafood) is also an activity showing no signs of an increase—72,000 tonnes produced in 1966 and 71,000 in 1975. However, in view of the country's seafaring tradition, its proximity to the major consumer markets and the importance of its export earnings (6.8 per cent of total earnings in 1975), the fishing industry is still a crucial factor in the country's economic growth and merits inclusion in any development strategy.

Sugar-cane has taken on a special importance in the country's agricultural activity: in ten years, production has more than doubled whereas export earnings tripled between 1966 and 1970 and then increased tenfold between

1970 and 1975, accounting for 17.4 per cent of total export earnings.¹ This is by far the best performance for any industry over the course of the last ten years. However, paradoxically, the importance of sugar in the Panamanian economy has not led to any lessening of the country's vulnerability now that an important proportion of its resources is linked to world prices.

With regard to the other activities in the sector of agriculture and animal husbandry, i.e., horticulture, cereals, coffee, fruits, rice, trends vary widely, which is an indication of the substantial differences in the systems of production, the size of farms, the technologies used etc. and the dispersion of landownership, particularly in the traditional sector.

The manufacturing industries are to a large extent dependent on the activities of the other sectors (construction in particular) and the trend in household consumption (e.g. light industry, textiles and food). A marked feature of this sector is the large number of family (and one-man) undertakings: according to a survey carried out in 1971, 81 per cent of undertakings had less than 50 salaried employees and 30 per cent less than 10. This has a direct effect on the employment pattern, the technological level and the dynamism of this sector. Particularly apparent is the fact that this sector is not the real driving force behind economic growth and that to a large extent (via the agro-tural products account for 28 per cent of industrial output); it continues to be tied to the construction sector (which has experienced a recession over the past ten years).

Trade is traditionally a very important activity in Panama and accounts for a significant share of GDP—its pace of growth is very similar to that for total national production. This sector is closely linked with foreign interests: in 1975 practically 50 per cent of bank loans—foreign capital—were granted to commercial establishments.

Service industries—indisputably the corner-stone of the Panamanian economy: by virtue of its contribution to GDP (31 per cent); through its links with the outside world (the Canal Zone alone contributes 6.3 per cent to GDP); through its contribution to balance-of-payment earnings (12.3 per cent) and above all because of the particular situation in the banking sector. In the space of five years, 1970-75, bank assets increased tenfold to a figure of B 8.5 billion—a considerable sum for a country the size of Panama and one which gives it the status of a true international financial centre. In the following section, dealing with trade and relations with the outside world, we will be referring to the real function and economic consequences of such an over-developed sector of the service industries.

1. Partly due to the favourable trend in world prices.

B. Trade and relations with the outside world

A few facts will suffice to put the problem into perspective. Firstly, an analysis of export figures shows that:

- during the course of the past ten years export earnings have increased 3.5 times, reaching a figure of B 277.7 billion in 1975;
- four products (of which three are agricultural) account for almost 92 per cent of this figure; in order of importance these are "petroleum products" (46.2 per cent), bananas (21.4 per cent), sugar (17.4 per cent) and "shrimps" (6.8 per cent). One can imagine the effect on the national economy should there be a fall in the market price for one of these products! Moreover, it will be noted that manufactured products account for a negligible share of exports;
- in relation to GDP, export earnings represent about 15.8 per cent, which would be a reasonable percentage were it not for the fact that this is made up of only three "agricultural" products plus the petroleum products;
- the country's main customers are the United States, the Canal Zone, Western Germany and Italy (together accounting for 79 per cent of exports). The United States is a special case since, on its own, it absorbs 62.5 per cent of the total exports of bananas, sugar and "shrimps".

Secondly, an analysis of import figures shows that:

- during the course of the last ten years, import purchases have increased 3.7 times faster than exports to reach a figure of B 795 billion in 1975;
- imports of capital goods—although not negligible—amount to only 15.8 per cent of the total;
- Petroleum products alone account for 40.6 per cent of imports, highlighting the country's vulnerability to world price movements (in 1973 imports of petroleum products were equivalent to 69 per cent of export earnings; in 1974, 133 per cent!) and the narrow margin of manoeuvre for those who are anxious to free the country from its dependence in the energy sector;
- Despite the predominantly agricultural character of its economy, Panama's imports of food products amounted to almost B 50 million (equivalent to 17.5 per cent of its export earnings) and its imports of consumer goods and intermediate products exceed its total earnings.

An analysis of the other items in the balance-of-payment figures shows that:

- under the heading "Transport", which for the most part comprises the port facilities provided by the country, earnings had risen to B 155.6 million in 1975;
- under the heading "Travel", which is linked with the harbour activities, tourism and the Canal Zone, net earnings stood at B 129.1 million in 1975;
- under the heading "Services", net earnings amounted to B 217.2 million (of which one-third with the Panama Canal);

— under the heading "Investments", the amount deriving from outside sources in 1975 was B 377.3 million;

— which means that by adding export earnings and these other balance-of-payment items mentioned above, we reach a total amount of B 1,156.9 million deriving from external sources, i.e. 65.7 per cent of national income.

Thus we have come full circle: Panama's external dependence is due to the vulnerability of its economy and to the nature of the three sectors—agriculture, trade and services. The country's "purchasing power" derives mainly from three products, i.e., sugar, bananas and shrimps (the earnings from exports of petrol derivatives need to be offset against imports of petroleum products) and from service industries and investments; earnings are directly affected by world prices; service industries and investment are directly linked to foreign countries.

The banking sector obviously plays an important role in the fundamental processes of Panama's economy. For example, the balance of payments current account deficit, which is normally financed by a surplus on the capital account (the balance of investments less earnings) has to be financed via the banking system. A particularly significant indication of this is the banking system's total external debt—an amount which has increased considerably over the past fifteen years. What is more, the banks intervene in the allocation of foreign investment to the various sectors of activity, creating as it were a kind of umbilical link between the development of these sectors and the decisions of a financial investor. In addition to this, the banking system in Panama, which includes a large number of branches of foreign banks, operates to a certain extent "on the fringe" of the country's economy in a kind of "closed circuit" with the large foreign banks. This has made Panama into an international banking centre, but this activity is totally dependent on the international business situation and falls largely (almost entirely) outside the country's control. Any crises (with the dollar, world inflation, political unrest in certain countries etc.) therefore has an immediate effect on what is the nerve centre of Panama's economy, i.e. the banking system.

C. Employment

The employment pattern confirms the foregoing comments on the economy of Panama. A few figures will illustrate this point:

— the total population of the country is in the neighbourhood of 1,670,000; after a natural population growth rate in the region of 3.2 per cent in 1966-67, a marked drop in the mortality rate combined with a very sharp fall in the birth rate resulted in a lowering of the population growth rate to 2.5 per cent in 1975;

— however, the "dependents ratio", i.e., the ratio between active and non-active members of the population, calculated on the basis of those over 15 years old, is still very high: about 75 per cent in 1975. The 1975 census gives

a figure of 508,430 active members of the population as against 378,350 economically inactive, since 7 per cent of the active population were unemployed;

— by sector, employment breakdown is as follows (in percentages):

Agriculture:	29.5
Trade:	13.4
Financial establishments:	3.2
Other services:	24.8

It will be noted that industry, mining, transport (which can be considered as a service), construction, water, gas and electricity together account for less than 25 per cent of those in active employment;

— if the figure of 487,400 in active employment is analysed by occupational category, this shows that 20 per cent were employees in the public sector, 40 per cent were employed in private enterprise, 4.2 per cent were working for the Canal Zone, 30 per cent were "self-employed", 2 per cent were "owners" and about 3.8 per cent members of a family concern. One is struck by the considerable importance of the public sector (1 worker out of 5) and the self-employed sector (1 worker out of 3). These two sectors, which vary greatly in several respects, i.e., work conditions, stability, system of remuneration, prestige, means of access etc., exert a decisive influence—as they have done in the past—on the practical conditions of employment in the private sector, which is the main subject of our enquiry;

— an analysis of the numbers in active employment by job category and by sector of activity highlights several important aspects of Panama's economy and social structure. The sector of agriculture and animal husbandry, for example, accounts for 22.2 per cent of "wage-earners", thus reflecting the importance of the large plantations and the proletarianization of this sector of the economy (of the 34,000 employees in agriculture, 12,300 are members of a trade union). Of the 9,500 "owners" half are to be found in the trade sector (4,600), 15 per cent in the service sector and 15 per cent in agriculture. Manufacturing industry accounts for a large proportion of the self-employed (25 per cent), which bears out the fact that this is a sector made up primarily of small family undertakings—which is not without influence either on the conditions of employment in this sector or on its potential for development. According to a survey on industry carried out in 1971, 81 per cent of industrial undertakings have less than 50 employees and 30 per cent less than 10 employees—large concerns with more than 200 employees account for only 15 per cent of salaried employment in this sector.

D. The educational system

Like most other countries in this continent, Panama has recently undertaken a reform of its educational system. Its implementation is however of too recent a date for it yet to cover the whole system and for it to be possible to evaluate the results.

The old system—judging from the statistical publications put out by the Ministry of Education—is constructed along classic lines: a common core following which there are two alternatives: (1) “active life” or “short courses designed as a preparation for active life” and (2) the “aristocratic” stream leading on to higher education. Looking at the system in greater detail, the pre-primary (kindergarten) education concerns a few privileged children under 6 (the age for entry into the primary school has recently been lowered to 6), i.e. about 14,000 children, 60 per cent in the public and 40 per cent in the private sector; the primary level (previously covering 6 years, extended to 9 two years ago) covers 335,000 children, of whom almost 99 per cent are in state schools. Secondary-level education divided the children from the 7th grade on into different groups (except of course those who leave school to start a job): (a) general education, which is divided into two cycles (the 1st and the *bachillerato*) and which is not designed to prepare “students for any specific type of employment”; and (b) vocational and technical education, which is job-oriented and which comprises a two-year cycle of vocational guidance (access to which is restricted to those in possession of a primary education certificate) leading to the “first vocational level”, the first general cycle and to the second three-year vocational cycle.

Vocational and technical education provides the following specialised courses: Agriculture, Trade, Domestic Science, Tailoring and Dressmaking, Industry, “Seamanship”. A student, at the end of the first general cycle, and providing he has passed the examination, can go on to take a three-year course of teacher training.

Second-level education thus plays a crucial role in the education system's relationship with the world of work. In 1976 it was estimated that 127,800 students were enrolled at this level. The private sector, which in the 1960s was very important (about 40 per cent), has declined: in 1976 practically 80 per cent of students were enrolled in the public sector. Table 2 (on pages 42-43) shows the trend in the numbers of second-level graduates. It will be noted that, over the six-year period, (a) the number of graduates from the general streams has substantially increased; e.g., the number of *bachilleratos* has more than doubled and the number of graduates from colleges of education has increased almost tenfold (according to some Ministry of Planning estimates, a large surplus of teachers is to be expected in the coming years); and (b) the average increase in the number of graduates from vocational and technical education establishments has been small—about 26 per cent. It is true however that this average covers widely different trends per speciality: a drop in numbers in the case of textiles, a slight increase in the case of industry and trade and a three-fold increase in the case of agriculture.

In addition, the education system covers higher education, special and further education and adult education (literacy programmes and vocational training).

With regard to the influence of the education system on employment and the labour market, three features of Panama's system deserve mention.

Firstly, the distinction between general and technical streams and short and long cycles. Students with different educational backgrounds will have different aspirations at the end of their studies and different ways of adapting to the labour market—for example, when seeking employment and with regard to their mobility on the job ladder.

Secondly, the "efficiency" of Panama's schools as witnessed by the promotion, repeat and drop-out rates. On the basis of data for 1975, repeaters in primary schools numbered over 20 per cent of those enrolled in courses 1 and 2 and between 10 and 15 per cent of those in courses 3 and 4. When they reach the stage of looking for a job, the youngsters in Panama differ not only with regard to the type of leaving certificate they have and the stream they have followed, but also in terms of their age and the length of time they have spent at school. This obviously influences their aspirations and the choice of jobs available to them in the various sectors of activity (particularly in the "modern" and "public" sectors), and their ability to choose between a family business, a large undertaking, or a traditional, manual or non-manual type of employment.

Thirdly, the system's administrative and organisational complexity—the private sector (by no means negligible at the secondary level), the adult education centres with some 25,000 students in 1974, the private schools for further education (5,000 students in 1974)—all help to widen the range of job applicants' "profiles". In the eyes of employers, both in the public and private sectors, the certificates obtained do not necessarily have the same "value", irrespective of the school attended. What is more, privileged relationships can develop between some employers and certain educational establishments, at least as far as some special job categories are concerned.

In this respect, and also from a general point of view, the structure of Panama's education system "corresponds" as it were to the country's economic system in the following ways:

- the considerable importance of the tertiary sector (trade and services) and, correspondingly, the number of jobs available in this sector—most of them not requiring vocational training although some demand certain specialisations. School-leavers without special qualifications outnumber those with specialised training by at least five to one. Two-thirds of the technical education graduates in 1975 had qualified in "Commerce";

- the considerable importance (in rural areas) of the traditional sector of agriculture in terms of numbers of workers and, as a consequence of this, the substantial proportion of unskilled labour in total manpower requirements. School-leavers with between 1 and 6 years of general education naturally constitute the main source of supply;

- the limited extent of specialised education for the manufacturing industry sector, with the exception of "textiles". Despite a decline in recent years in the number of textile graduates, in 1975 they none the less were equivalent to almost 40 per cent of the total number of graduates from the other specialised industrial courses.

TABLE 2. Pupils graduating from secondary education, by type of education and certificate awarded: school years 1969-75.

Type of education and certificate awarded	Graduates 1969-75									
	1969	1970	1971	1972	1973	1974	1975	Total	Public	Private
TOTAL	7 485	8 797	9 595	10 302	12 576	12 387	14 145	75 287	41 781	33 506
BACHILLERATO	1 863	2 515	2 480	2 620	3 007	3 263	4 008	19 756	13 916	5 840
Science	1 152	1 620	1 541	1 539	2 051	2 406	3 015	13 324	10 839	2 485
Arts	331	544	579	537	464	467	583	3 505	3 077	428
Science and Arts	277	223	231	463	421	337	310	2 262	—	2 262
Science, arts and philosophy	103	128	129	81	71	53	100	665	—	665
TEACHER-TRAINING¹	372	502	629	879	2 118	2 577	3 530	10 607	10 607	—
VOCATIONAL AND TECHNICAL²	5 250	5 780	6 486	6 803	7 451	6 547	6 607	44 924	17 258	27 666
AGRICULTURAL	124	162	172	200	381	356	350	1 745	1 289	456
COMMERCIAL	3 231	3 267	4 102	4 043	4 613	4 075	4 320	27 651	10 304	17 347
DOMESTIC SCIENCE AND DRESSMAKING	770	762	891	859	950	721	505	5 458	1 495	3 963
INDUSTRIAL	1 024	1 510	1 190	1 515	1 351	1 218	1 245	9 053	3 767	5 286
B. Indust.	—	—	—	—	—	20	143	163	121	42
Construction	—	—	—	—	—	—	44	44	44	—
Electricity	—	—	—	—	—	—	30	30	30	—
Electricity and electronics	—	—	—	—	—	—	49	49	34	15
Mechanical engineering	—	—	—	—	—	20 ³	7	27	—	27
General mechanics	—	—	—	—	—	—	13	13	13	—
OTHERS	1 024	1 510	1 190	1 515	1 351	1 198	1 102	8 890	3 646	5 244
Graphic arts	29	33	26	57	45	23	26	239	179	60
Construction	150	241	151	194	262	128	137	1 263	707	556
Draughtsmanship	8	11	6	6	1	4	6	42	2	40
Electricity and electronics	261	396	408	465	412	401	340	2 683	991	1 692
Mechanical engineering	525	736	588	737	534	625	502	4 247	1 390	2 857
Metallurgy	51	93	11	56	97	17	91	416	377	39

MISCELLANEOUS	101	79	131	186	156	177	187	1 017	403	614
Hairdressing	10	3	8	1	5	—	—	27	27	—
Beauty treatment	30	11	38	123	89	125	122	538	—	538
Seamanship	43	54	71	53	52	42	61	376	376	—
Broadcasting	13	3	—	—	—	—	—	21	—	21
Telegraphy	—	6	11	4	8	7	4	40	—	40
Theology and catechism	—	2	3	5	2	3	—	15	—	15

1. In-service personnel.

2. Graduates of the second cycle and the first vocational cycle

3. Graduates in mechanical engineering and electricity

SOURCE *Estadísticas de educación*, Panama, November 1976

E. The metropolitan area

This area comprises the Panama-Colon urban complex and the surrounding districts. The Canal Zone, which forms part of the area, is treated separately in the statistics.

A few figures will suffice to illustrate the enormous contrast between the metropolitan area and the rest of the country. The metropolitan area in fact accounts for:¹

- 55.7 per cent of the country's working population;
- 15 per cent of the workforce in the agricultural sector, but 66 per cent of those in the service industries, 68 per cent of those in manufacturing, 71.4 per cent of those in construction, 74.8 per cent of those in trade, 87 per cent of those in financial establishments;
- 63 per cent of the workforce with no education or with only primary education (partial or complete), but 79.1 per cent of the workforce with secondary education and 88.3 per cent of those with university education, i.e. almost all the country's "brain power";
- 59 per cent of the kindergartens, 38 per cent of students enrolled in primary education, 54 per cent of those enrolled in the secondary level and 87 per cent of the students in higher education;
- the country's main infrastructures (harbours, airports, highways), its transport system, its health and social services; the "lion's share" of G.D.P. (except for agriculture, i.e., an average of 61.3 per cent, all sectors combined);
- the head offices of almost all the business concerns, the major financial institutions (e.g., almost all the banks), the most important export companies and trading establishments. For example, the provinces of Panama-Colon account for 77.7 per cent of the total number of wholesale trading establishments (with more than 5 employees), which represents 95 per cent of the permanent labour force in this sector; 76.5 per cent of the retail establishments (more than 5 employees), representing 79.8 per cent of the permanent workforce. In the service sector, taking only the "café-hotel-restaurant" group and services provided to the public or to industry, Panama and Colon accounted for 590 undertakings in 1971, i.e. 82.5 per cent of the total for the country and equivalent to 92.7 per cent of the total earnings for this sector. In the case of manufacturing industry, 75 per cent of the concerns are located in the metropolitan area and account for 82.1 per cent of total production;²
- 77.5 per cent of the trade-unions (131) and 70.4 per cent of unionised labour.

These figures clearly show the very wide disparity in terms of economic growth, standard of living, living conditions, and access to education and social services between the metropolitan area—the cultural, economic, geographic and political centre of a country which looks to the outside

1. The figures refer to 1974, 1975 or 1976.

2. Controlaría General de la Republica. Dirección de Estadística y Censo—Censos Nacionales de 1970.

world—and the rest of the Republic (with the exception of a few islands of prosperity)—the *periphery*, poor in infrastructures, dependent on the centre, providing the hinterland to support the growth of the metropolitan area, far less developed, with much lower standards and conditions of living (see map) and dependent on the political, economic and social decisions taken at the centre.

Any plan for growth, any policy for development, any analysis of education's role in the present, past and future of the country must take this fact into account. Any proposal for reform, change or political action has to be defined in this context.

F. The inequalities

The nature and structure of Panama's development, the country's history and the preponderance of the metropolitan area inevitably result in a series of inequalities which are easily illustrated by a few statistics. For the sake of brevity, these figures are given by sex and income level. The accompanying maps complete the picture by illustrating these inequalities on a geographical basis with the help of a few key indicators.

Table 3 provides a good means for comparing the status of men and women in Panama and it calls forth several comments:

1. Despite the fact that men and women have a fairly comparable level of education, the proportion of Panamanian women in active employment is only one-third that for men. Despite this low figure for women, they have a much higher rate of unemployment than men.
 2. There are fewer men than women (42.4 per cent) in the teaching profession, which is probably less well paid than other jobs requiring comparable qualifications.
 3. Although the percentage of women in the "Professional" category is much higher than that for men (13 per cent as against 3.5 per cent) and in the "office-workers" category, there is a greater proportion of men in decision-making positions (3.2 per cent of "managers" as against 1.4 per cent) and in the traditionally "male" activities (e.g. farmers, drivers, craftsmen and workers). The discrimination against women is particularly apparent in the categories "domestic staff", "doctors", "dentists" and "nurses".
 4. The figures for average earnings and salary distribution bring this inequality between the sexes into sharp focus. In every sector, without exception, the average earnings for a man are higher than those for a woman. In the high-income bracket there are three times as many men as women (6.3 per cent as against 2.1 per cent) and if this is weighted in terms of the numbers in active employment, the ratio becomes 9:1.
- Although these figures lack detail, they show that the woman's place in the economic activities of Panama is far inferior to that of her male counterpart and is in sharp contradiction with her level of education.

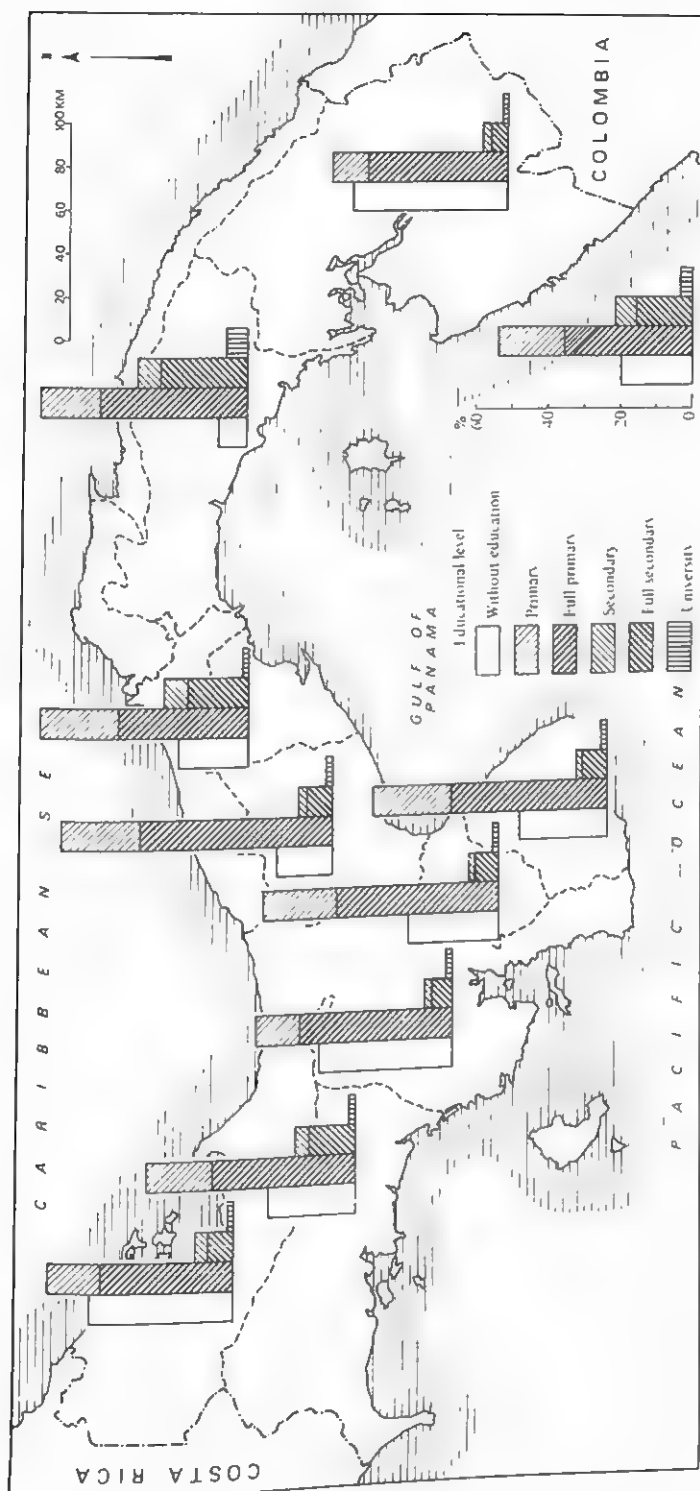
TABLE 3. Inequalities by sex.

	Men	Women
Total population, 1.7.75	855 380	822 265
Educational level in 1970 (percentages)		
No schooling		
Primary	23.4	24.0
Secondary	57.4	56.5
University	16.2	17.1
Illiterates (percentage)	2.8	2.2
No. of teachers (1973)	20.4	20.9
	5 620	13 228
Number in active employment as percentage of population over 10 years old (1970)		
Unemployed as percentage of active population (1970)	72.9	25.8
'Professionals', engineers etc. as percentage of active population (1960)	7.3	16.5
Managers, administrators, gov. officials at management level	3.5	13.0
Office workers	3.2	1.4
Sales staff	4.5	19.4
Farmers, stock-breeders	5.8	8.5
Drivers of transport vehicles	48.9	6.8
Craftsmen and equivalent	5.1	—
Workers and day labourers	15.6	8.5
Domestic staff	5.2	1.5
	7.2	39.
Average earnings in Balboas (1970)		
All sectors		
Mining and quarrying	28.8	21.0
Manufacturing industries	19.0	16.7
Trade	29.4	23.8
Services	29.5	27.0
Canal Zone	32.3	18.1
Public sector employees (1973)	66.7	49.5
Salaries in Balboas less than B 250		
B 250-500	77.4	80.2
over B 500	16.3	17.7
Doctors (1973)	6.3	2.1
Dentists	999	173
Nurses	155	32
	3	1 060

SOURCE Panorama estadística sobre la mujer, Dirección de Estadística y Censo—Panama, enero 1975.

Inequality of income

As one might expect, there is considerable inequality of income between the metropolitan area and the rest of the country, but the same is also true between urban and rural areas, between workers in different sectors of activity and in particular between workers in the public and private sectors, and between individuals with different levels of education and different jobs.



MAP 1. Educational level of the population 10 and over, by provinces.

TABLE 4. Active population, by weekly earnings and sector and branch of activity: 1970 census
(population aged 10 years and upwards)

Sector and branch of activity	Weekly earnings (in Balboas)			
	Total	Less than 15	15-24	25-34
Total	247 075	65 297	49 841	49 43
Agriculture and hunting	34 779	17 646	12 391	2 670
Forestry and timber	398	148	163	37
Fishing	1 503	566	313	201
Extraction of other minerals	432	164	138	44
Foodstuffs, beverages and tobacco	10 213	1 758	3 160	2 662
Textile, clothing and leather goods	4 711	604	1 858	1 579
Timber and timber products, including furniture	3 209	537	876	991
Paper and paper products: printing and publishing	2 749	123	407	978
Chemicals and petroleum and coal derivatives, rubber and plastics	1 648	73	169	438
Non-metal mineral production, excluding petroleum and coal derivatives	2 256	265	416	890
Basic metal industries	376	8	57	196
Metal products, machinery and equipment	1 531	115	231	588
Other manufacturing industries	105	9	21	48
Electricity, gas and steam	2 444	88	321	380
Hydraulic works and water supply	1 568	20	455	420
Construction	19 639	1 744	4 010	7 022
Wholesale trade	11 694	905	2 015	3 196
Retail trade	16 842	3 909	4 984	4 370
Restaurants and hotels	9 428	2 180	3 334	2 469
Transport and warehousing	7 347	995	1 596	1 568
Communications	1 613	125	545	318
Financial establishments	3 954	112	335	644
Insurance	854	80	56	95
Real estate and business services	3 615	428	685	671
Public administration and defence	23 761	1 516	4 492	7 501
Health and related services	668	43	294	174
Social and other community services	22 664	1 232	2 731	6 452
Recreation and entertainment and cultural services	2 697	429	774	589
Domestic services	32 088	27 563	2 097	1 160
International or other extra-territorial organizations	637	37	41	49
Activities not clearly specified	1 284	312	240	270
Panama Canal Zone	20 368	1 563	636	763

SOURCE General Compendium Population

Some of the figures are shown in Tables 4 to 7, and these call for some comment.

Firstly, the 1970 census figures show that incomes vary significantly by age-group (the under-25 age-group having the lowest income); by sex, with women earning less than men (e.g., the proportion of "employees" earning

Weekly earnings (in Balboas)								
35-44	45-54	55-64	65-74	75-99	100-124	125-149	150-199	200+
30 396	13 036	11 216	7 918	8 579	4 548	2 431	2 168	2 212
1 137	350	116	117	154	64	31	53	50
23	12	10	1	1	3	0	0	0
219	82	34	44	20	11	6	2	5
39	16	7	8	6	1	1	3	5
1 129	498	247	195	227	108	66	75	88
337	127	47	47	41	20	14	16	21
485	158	60	38	34	17	4	3	6
609	264	115	70	79	40	17	30	17
226	139	123	110	168	61	39	46	56
355	137	64	31	34	24	13	13	14
74	14	7	5	9	3	1	1	1
271	132	63	30	31	24	12	16	18
11	2	7	2	2	1	0	1	1
637	381	235	131	128	43	23	45	32
358	123	63	23	51	16	16	15	8
3 653	1 228	765	424	394	163	68	93	75
1 988	939	607	443	582	337	197	234	251
1 843	684	305	237	234	134	43	53	46
841	249	94	96	80	38	15	12	20
1 079	613	294	262	346	206	101	106	81
320	121	47	44	42	12	13	10	16
966	579	333	200	308	171	899	100	117
163	120	59	55	73	45	26	39	43
536	357	217	137	199	139	83	75	88
5 043	1 710	986	582	1 008	381	252	169	121
114	19	8	7	4	3	0	1	1
5 624	1 713	1 365	1 274	1 142	271	193	271	396
341	164	81	118	94	36	21	25	25
710	247	124	74	75	16	7	9	6
66	47	23	35	46	22	16	28	227
151	90	54	37	62	26	10	14	18
1 048	1 721	4 556	3 041	2 905	2 112	1 054	610	359

more than B100 per week is 6 per cent for men and 1.6 per cent for women; in relative terms, there are twice as many women than men in the lowest income brackets of less than B15); and by zone, with the emphasis being on urban areas (the lower-income brackets represent 20 per cent of workers in urban areas and 44 per cent in rural areas); the high income brackets, i.e.,

TABLE 5. Active population; by weekly earnings, sex and weekly hours worked, by area and province: 1970 census

Area, province, sex and weekly hours worked	Weekly earnings (in Balboas)				
	Total	Less than 15	15 to 24	25 to 34	35 to 44
TOTAL	247 075	65 297	49 841	49 433	30 399
Less than 25	9 510	5 962	1 463	888	496
25 to 34	10 419	3 461	1 714	1 593	1 572
35 and over	225 524	54 598	46 563	46 855	28 265
Not declared	1 622	1 276	101	97	66
Men	166 259	32 679	36 857	35 807	20 547
Women	80 816	32 618	12 984	13 626	9 852
URBAN	183 402	37 131	32 004	40 257	25 935
Less than 25	6 103	3 135	1 153	741	430
25 to 34	7 756	1 865	1 282	1 270	1 372
35 and over	168 437	31 324	29 491	38 162	24 071
Not declared	1 106	807	78	84	62
Men	114 300	10 990	20 847	28 487	17 165
Women	69 102	26 141	11 157	11 770	8 770
RURAL	63 673	28 166	17 837	9 176	4 464
Less than 25	3 407	2 827	310	147	66
25 to 34	2 663	1 596	432	323	200
35 and over	57 087	23 274	17 072	8 693	4 194
Not declared	516	469	23	13	4
Men	51 959	21 689	16 010	7 320	3 382
Women	11 714	6 477	1 827	1 856	1 082
PANAMA	144 105	28 165	21 829	34 373	20 803
Less than 25	4 645	2 295	907	606	316
25 to 34	5 941	1 300	1 038	1 016	1 073
35 and over	132 566	23 859	19 829	32 675	19 366
Not declared	953	711	55	76	48
Men	90 832	8 651	13 931	24 928	14 002
Less than 25	2 650	1 086	565	423	212
25 to 34	2 484	475	591	410	304
35 and over	85 105	6 656	12 740	24 048	13 459
Not declared	593	434	35	47	27
Women	53 273	19 514	7 898	9 445	6 801
Less than 25	1 995	1 209	342	183	104
25 to 34	3 457	825	447	606	769
35 and over	47 461	17 203	8 089	8 627	5 907
Not declared	360	277	20	29	21

SOURCE 1970 National Census

Weekly earnings (in Balboas)							
45 to 54	55 to 64	65 to 74	75 to 99	100 to 124	125 to 149	150 to 199	200 and over
13 036	11 215	7 918	8 579	4 549	2 430	2 166	2 212
229	133	111	99	53	31	23	22
703	499	413	262	61	47	61	33
12 076	10 566	7 387	8 208	4 426	2 350	2 077	2 153
28	17	7	10	9	2	5	4
9 207	8 540	6 035	6 646	3 862	2 110	1 894	2 075
3 829	2 675	1 883	1 933	687	320	272	137
11 692	10 191	7 326	8 049	4 304	2 323	2 067	2 123
204	124	103	94	48	28	22	21
648	470	396	256	59	46	60	32
10 817	9 581	6 820	7 689	4 188	2 248	1 980	2 066
23	16	7	10	9	1	5	4
8 072	7 616	5 510	6 179	3 629	2 014	1 801	1 990
3 620	2 575	1 816	1 870	675	309	266	133
1 344	1 024	592	530	245	107	99	89
25	9	8	5	5	3	1	1
55	29	17	6	2	1	1	1
1 259	985	567	519	238	102	97	87
5	1	0	0	0	1	0	0
1 135	924	525	467	233	96	93	85
209	100	67	63	12	11	6	4
9 382	8 109	5 710	6 424	3 583	2 017	1 796	1 914
162	102	82	75	36	25	20	19
463	357	329	207	48	35	45	30
8 733	7 638	5 294	6 134	3 493	1 957	1 726	1 862
24	12	5	8	6	0	5	3
6 335	5 973	4 167	4 793	2 988	1 729	1 546	1 789
106	70	57	57	20	19	18	17
249	139	111	89	36	24	28	28
5 962	5 757	3 996	4 639	2 926	1 686	1 495	1 741
18	7	3	8	6	0	5	3
3 047	2 136	1 543	1 631	595	288	250	125
56	32	25	18	16	6	2	2
214	218	218	118	12	11	17	2
2 771	1 881	1 298	1 495	567	271	231	121
6	5	2	0	0	0	0	0

TABLE 6. Average wage and percentage distribution of people in employment aged 15 and upwards, by weekly earnings, area, sex and level of instruction: household survey—October 1974.¹

Area, sex and level of instruction	Average earnings (in Balboas)	Percentage distribution by level of instruction	Percentage distribution by weekly earnings (in Balboas)												
			Less than 15	15-19	20-24	25-29	30-34	35-39	40-49	50-59	60-69	70-79	80-89	90-99	100 & more
METROPOLITAN AREA															
MEN															
No grade	35.7	100.0	1.9	1.9	3.1	8.0	11.2	13.3	18.7	8.4	7.3	3.9	4.7	3.6	14.0
Primary	34.9	2.6	3.2	4.1	5.4	20.0	17.6	14.6	12.8	3.2	4.1	4.1	1.4	2.7	6.8
Secondary	38.7	40.5	3.4	2.8	4.8	11.0	16.2	16.1	18.8	8.8	4.5	3.0	4.5	2.4	3.7
University	46.9	42.4	1.0	1.4	2.2	7.0	9.6	13.8	21.8	8.3	9.8	4.2	4.9	3.6	12.4
	98.5	14.5	0.2	0.2	0.6	0.2	1.2	4.0	10.1	8.3	8.6	5.2	5.1	7.3	49.0
WOMEN															
No grade	37.0	100.0	21.2	3.2	3.9	10.6	6.9	10.6	15.5	9.1	5.3	3.6	3.4	2.0	44.7
Primary	9.6	1.8	78.2	6.5	—	—	7.7	1.2	3.2	—	—	3.2	—	—	—
Secondary	15.5	30.5	49.4	5.6	7.4	12.6	7.7	6.2	5.9	2.5	0.7	1.2	0.4	—	0.4
University	39.4	48.5	9.1	2.8	3.0	13.0	8.7	15.2	21.0	10.4	6.5	2.4	3.5	1.6	2.8
	62.0	19.2	1.3	—	1.3	2.5	0.9	6.7	18.3	16.9	10.4	10.2	8.5	6.3	16.7
REMAINDER OF COUNTRY															
MEN															
No grade	32.2	100.0	6.7	12.6	12.5	14.0	9.6	11.0	15.9	6.4	4.5	1.2	1.4	1.0	3.2
Primary	22.5	5.1	4.5	36.3	18.6	21.9	5.8	7.1	5.8	—	—	—	—	—	—
Secondary	27.5	61.8	9.2	15.6	16.8	17.1	11.8	9.8	12.2	3.4	2.5	0.4	0.3	0.4	0.5
University	43.1	27.7	2.8	4.0	4.3	7.9	7.2	16.1	24.8	12.7	8.2	2.5	3.1	1.9	4.5
	68.6	5.4	—	—	—	1.3	0.6	3.6	19.5	15.2	11.4	5.0	7.3	4.9	31.2
WOMEN															
No grade	29.7	100.0	30.0	4.7	6.9	9.0	4.4	14.1	17.9	7.0	2.1	1.2	1.1	0.9	0.7
Primary	9.1	2.9	82.6	—	7.0	10.4	—	—	—	—	—	—	—	—	—
Secondary	12.3	40.2	61.2	8.9	10.3	10.1	2.2	4.0	2.3	0.9	0.1	—	—	—	—
University	39.2	48.0	6.2	2.4	4.8	9.1	7.1	24.4	30.1	10.9	3.1	1.0	0.2	0.3	0.3
	53.5	8.9	—	—	2.3	3.0	1.1	8.8	29.3	15.7	6.5	8.6	11.1	8.3	5.3

1 Not including the agricultural population or people in employment remunerated by commissions or tips, or for piecework or payment in kind. The percentages were obtained from the unrounded figures
SOURCE: Estadística Panamena: Year XXXV.

TABLE 7. Remuneration paid to workers engaged in the production and distribution of electricity, by occupational category: years 1969-73

Year	Remuneration ¹ (value in Balboas)				
	Paid to employees			Received by each employee	
	Total	Administrators, technicians and assimilated	Skilled and unskilled workers	Total	Administrators, technicians and assimilated Skilled and unskilled workers
1969	6 706 386	3 196 313	3 510 073	3 095	3 725 2 681
1970	7 380 759	3 405 706	3 975 053	3 187	3 844 2 780
1971	8 196 121	3 987 042	4 209 079	3 199	4 310 2 571
1972	8 507 490	4 292 840	4 214 650	3 692	5 261 2 832
1973	7 094 160	3 519 595	3 574 595	3 941	5 686 3 027

¹ Including emoluments, salaries and other forms of remuneration

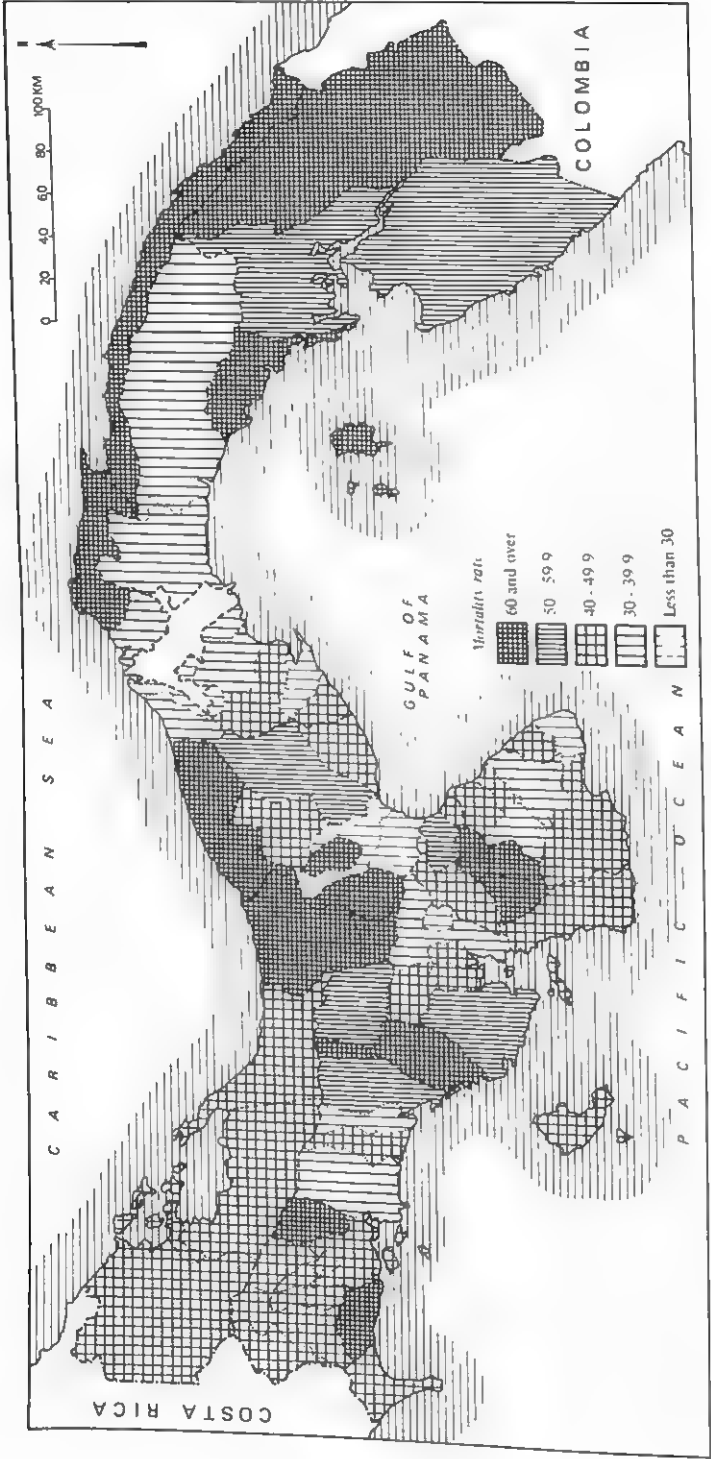
SOURCE Estadística Panameña: Industrias: Manufacturing and Electricity 1973 Survey.

more than B100, represent 5.8 per cent of workers in urban areas and 0.9 per cent in rural areas. The most favourable distribution is to be found in the Province of Panama with 19.4 per cent in the low-income groups and 6.5 per cent in the high-income categories, as against 26.3 per cent and 4.5 per cent for the Republic as a whole.

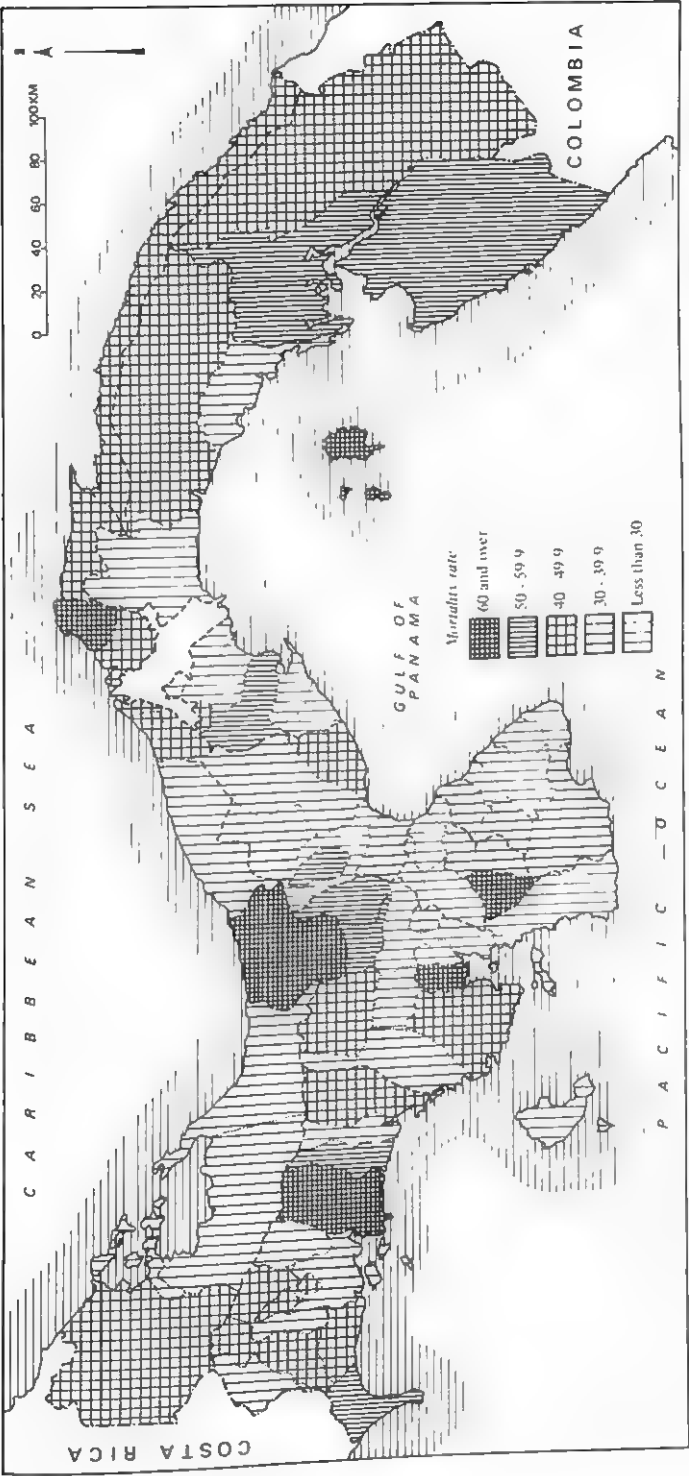
Secondly, on the basis of the October 1974 employment survey, the same categories of workers are under-privileged, i.e., by sex and by place of residence. If one takes into account the level of education, the figures show that average salaries vary more or less in the ratio of 1:3 for men (depending on whether they are in the "no grade" category or in the "University" category) and in the ratio of 1:5 or 1:6 in the case of women. Not only is the woman's average income lower for the same level of education, but the spread of women's income is considerably greater than that for men.

Thirdly, although it is difficult to compare the census data with the survey data, it would seem that income disparities did not diminish during the course of the four-year period 1970-74. In this respect the data on salary trends in the "electricity" sector are particularly striking: over the period 1969-73 average salaries increased by 27.3 per cent, but whereas for the upper grades (administrative staff, engineers etc.) the increase was 52.6 per cent for the category of skilled and unskilled workers the increase was only 13 per cent. It is obvious that the first of these groups has benefited from the country's economic expansion whilst the second group has seen its purchasing power eroded by price inflation.

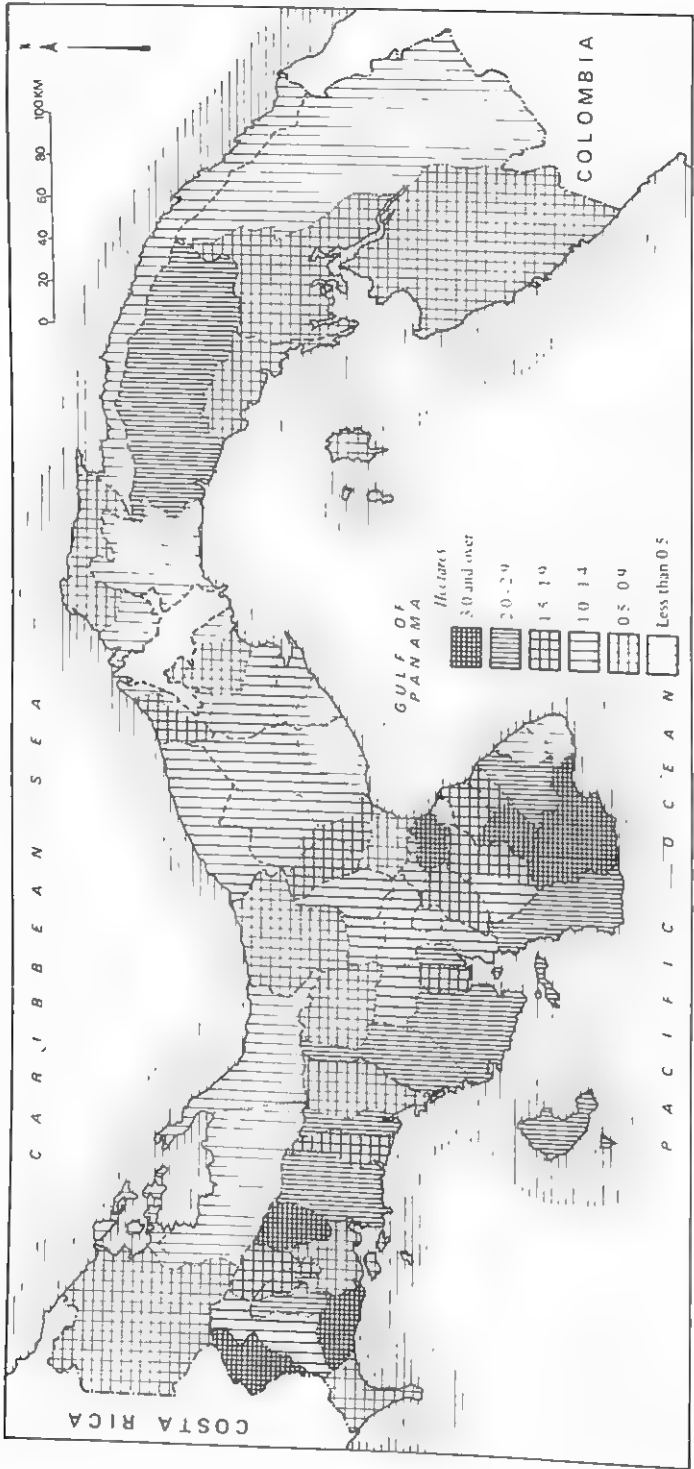
Lastly, an analysis of income distribution by sector illustrates the dichotomy and the contrasts between the primary and tertiary sectors—with the advantages being on the side of the tertiary sector (with the obvious exclusion of domestic service, which almost entirely falls within the lowest income ranges). The data on the secondary sector highlight the contrasts between



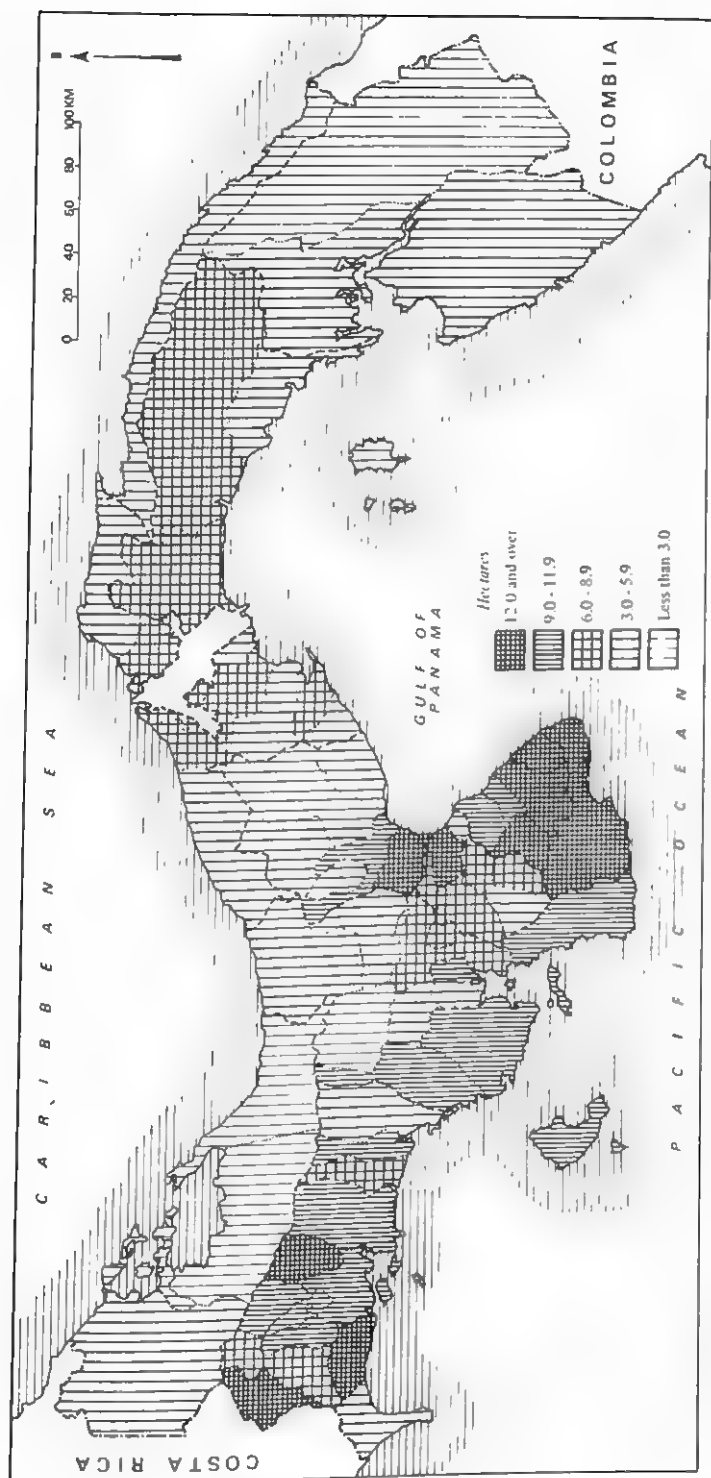
MAP 2. Infant mortality rates, 1967.



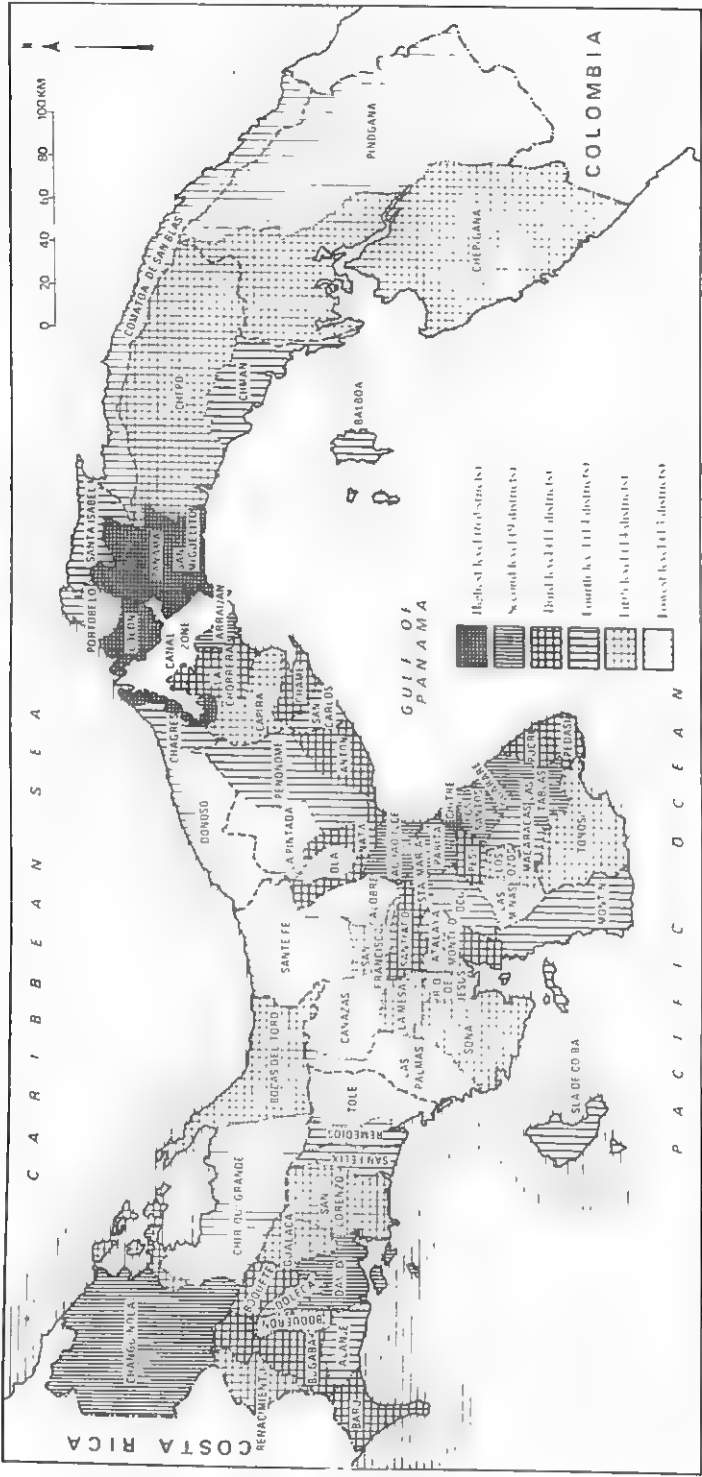
MAP 3. Infant mortality rates, 1972



MAP 4. Cultivated areas, in hectares per inhabitant.



MAP 5. Cultivated areas, in hectares per inhabitant (farming population only).



MAP 6. Level of economic development, by district.

state undertakings (e.g., electricity) modern industries (e.g., chemical) and family undertakings (e.g., textiles).

In this respect, the data on income distribution to a large extent reflect the characteristics of Panama's economy and social structure and bear out the analysis put forward in this paper: dependence, dualism and inequality.

G. Conclusions and consequences

The foregoing observations obviously bring us to the problem which has to be faced when putting forward any thoughts on any strategy and any policy for growth and development in Panama. What type of growth and for what kind of development? To this now classic question, many countries have given the reply "a strategy of self-reliance, anti-dualist, egalitarian". The main outcomes of this have been the emphasis on regional development policies, a search for economic independence via the reappraisal of foreign trade policies (the new world economic order) and policies to eliminate poverty and reduce economic disparities.

In the case of Panama, to adopt such strategies, linked as they obviously are to fundamental political options, raises formidable problems which are the result not only of the country's geographical position, its available resources and production structures, but also of its historical, cultural and social background.

The brief analysis contained in this chapter raises a certain number of practical questions with regard to the aspect which is of more direct concern to us: the relationship between education and the world of work and the implications with regard to educational planning.

Panama's economic structure will have a direct influence on its manpower structure. What effect will a change in the economic situation have on the utilisation of human resources, both those with educational qualifications and those without? What implications will this have in terms of planning the supply of resources? Switch the emphasis from the tertiary to the secondary sector, restructure agriculture and modernise it, encourage (or discourage) a growth in the number of family undertakings, amalgamate the small concerns and gear their production to export (or to the domestic market), reduce wage differentials and take action with regard to the structure of production costs and the distribution of added value, set up local centres for development—i.e., regional capitals, to help offset the preponderance of the Panama-Colon area, etc.—all of these are measures which will directly affect the world of work and manpower utilisation. It is essential to understand how.

When confronted with this analysis, those responsible for educational policy may well ask themselves the question: What has education done, and what can it do, to change the situation? At first sight, it would seem that they have a whole range of possibilities available to them; e.g., provide equal educational opportunities and conditions in rural and urban areas and by sex and by age-group, etc; supply the requirements in terms of skilled manpower

for a self-reliant economy and on the basis of those sectors designated for priority development; reduce the disparity between "aristocratic" and "short" streams; standardise the type of education provided (e.g. duration, content, method) so that the younger generation is trained for a type of activity consistent with the country's socio-economic aims. In fact, the adoption of such measures presupposes that the complex relationships between education and development are both recognised and understood—which is not the case; that the relationship between the two social institutions of education and the world of work is perfect (or ideally) both harmonious and coherent—which has yet to be proved; and that once the socio-economic objectives have been officially adopted it can be taken for granted that the behaviour of business leaders, of those owning the means of production and of all those who provide employment will be consistent with these objectives and that it is therefore both reasonable and wise to work on this assumption in order to encourage action in the area of educational policy. Basically, this constitutes one of the fundamental difficulties, namely, our lack of awareness of failure to appreciate the true relationship between economic and social objectives, the measures taken to achieve these and the behaviour of workers and employers—in other words, the prime socio-economic actors when it comes to development objectives and policies for employment and education.

Our choice of the prime area for study in the following chapters was guided by these considerations. The problem will be basically one of assessing (a) the relationship between employment patterns and type of undertaking; (b) the complexity and diversity of jobs with regard to their internal relationships and with reference to the world of production; and (c) employers' recruitment and promotion policies in relation to the characteristics of the company and from the point of view of those of the workers and, in particular, their educational background. It is hoped that this will provide some useful information and some food for thought with regard to the problems outlined above.

II. A typology of undertakings and their occupational structures

The occupational structure is one of the first very important indicators of the way an undertaking utilises human resources. The various forms which the division of labour can take entail a differential analysis of the levels of qualification and, by the same token, of the consequences of the demand brought to bear on the educational system. It is generally accepted that the occupational structure is determined by technological imperatives—it will therefore depend on the sector of production, the technology employed or the various coefficients of modernity. It is however too simple to reckon on a purely technological determinism, for occupational structures and variations may be the result of certain non-technical characteristics such as an undertaking's social characteristics (type of ownership), or its position on the market. The specific choice with regard to the division of tasks is in fact made at the level of the individual undertaking and these choices reflect the social relationships which grow up within it.

In this chapter we shall be analysing the characteristics—social, technical and market position—of the undertakings in the sample in order to define a preliminary typology both of sectors and of undertakings across sectors. We shall then go on to examine to what extent these different characteristics affect the organisation of work and the occupational structure. It is obvious that the occupational structure within a bank, a hospital or a retail trading establishment will vary considerably and, in view of the diversity of the sectors covered in our sample, we shall be comparing occupational structures first of all between sectors and then within a sector or a large sector.

A. Characteristics of the undertakings

An undertaking was defined first of all by its technical characteristics: type of product and the sector of production to which it belongs, its size and its technology. Technology has been assessed in different ways depending on the sector: in the case of industry what was taken into account was the production process, i.e., a "one-off" system, series production or continuous flow production. In the case of services, the age of the most important equipment

was taken into consideration plus the method of accounting used (the statutory minimum or full management accounting). In the case of the trade sector, several indicators were used to measure the degree of modernity: the system of accounting, the method of stock control, the system of materials handling, the system of selling and the degree of integration with various upstream levels (production, importation, wholesale trade) and downstream levels (retail trade).

An enterprise was defined secondly by its institutional characteristics:

- its status, distinguishing between public undertakings, private individually-owned companies, limited companies, multinationals or co-operatives;
- its type (degree of autonomy, i.e., single undertaking, main operation of a company with several operations, parent company, branch or subsidiary of a national group);
- the date of establishment or the date of the most recent change in legal status.

Thirdly, an undertaking was defined by its market position. This can be measured in terms of the firm's size or its figure for total assets.¹ In addition, in the case of manufacturing industries we also took into account the percentage of production exported and the market situation, i.e. monopolistic or competitive.

In order to construct the typology of the sectors or undertakings, the degree of correlation between the different technical, social and other characteristics was measured.

1. Typology of the sectors

It may be useful to give a brief summary of the sample's structure before doing any analysis by sector.

(a) *Number of undertakings per sector.* This is generally fairly low, which will somewhat limit the possibility of making comparisons within a sector: the number ranges from three in the health sector to 16 for the wholesale trade. Six of the sectors are represented by only four undertakings each. However, despite the limited number of undertakings, they may be of considerable importance from the point of view of number of employees.

(b) *Breakdown by size.* Four size categories were used:

- 50 employees or less—in theory, confined solely to the service sector based on the method of sample selection;
- 51-100 employees;
- 101-200 employees;
- more than 200 employees.

1. In the survey, respondents were asked to give the figure for net income. However, we have been obliged to omit this indicator from the analysis in view of the high level of non-response and the unreliable nature of some of the figures.

The sample is well distributed in terms of size since the percentage of undertakings in each category is respectively 27.1, 29.4, 24.7 and 18.8.

(c) *Breakdown by status.* Most of the undertakings are, on the one hand, private (88.2 per cent) and, on the other hand, limited companies (70.6 per cent). Individually-owned companies comprised only 3.5 per cent of the sample, despite their importance on a national level (cf. Chapter I). This is due to the method of sample selection, i.e., limited to undertakings with more than 30 or 50 employees. The distribution of these individually-owned companies by sector is, however, significant: clothing and laundry. Co-operatives are negligible (2.4 per cent), all in the transport sector. The multinationals and state-owned enterprises each account for 10.8 per cent of the sample. Although they represent a small proportion of the sample, the state-owned enterprises account for a large share of the total number of employees—close on 41.4 per cent comparable with the limited companies. State-owned enterprises are to be found in many sectors: they constitute the majority in the water and electricity and health sectors and they are also present in transport, banking, other services, hotels and restaurants and the food industry.

(d) *Breakdown by type.* The majority of undertakings surveyed were single undertakings (52.9 per cent), but there was a significant number of main branches or operations (23.5 per cent) and subsidiaries of a national group (16.5 per cent).

Having completed this summary of the principal characteristics of the sample, one can begin to construct a typology of the sectors by analysing how these characteristics are distributed amongst them and by introducing the data concerning the technical aspects. Table 8 summarises the survey results by sector. From this it is possible to draw a certain number of conclusions which in fact are not very surprising.

In the case of industry the water and electricity sector would appear to be by far the most modern, in that all the undertakings have continuous flow production and enjoy a monopoly of the market. Three of the four enterprises are public and two are main undertakings (which indicates a certain degree of power and importance). The breakdown by size is less clear-cut: two of the undertakings are very large (more than 1,000 employees) and two are small (less than 100 employees). On the other hand, the clothing sector is much more traditional. A system of mass production is used,¹ it is a competitive market, few undertakings export and those which do, export only a small part of their production. From the size point of view, they are small or medium. Only one out of the nine undertakings has more than 200 employees. All are

1. In view of the size of the undertakings included in the sample, there are no undertakings with a "one-off" system of production. From here on, production in series will be termed "traditional".

TABLE 8. Typology of sectors.

	Food	Clothing	Electricity and water	Wholesale trade	Retail trade	Transport
Number of undertakings	8	9	4	16	8	6
Ownership	6 Ltd. Co. 1 public 1 multi- national	8 Ltd. Co. 1 indiv- owned	Majority public	8 Ltd. Co. 3 multi- national	8 Ltd. Co.	9 Ltd. Co. 1 public
Type	3 subsid- iaries 3 single 2 parent companies	All single under- takings	2 parent companies	6 single 5 parent companies 4 subsid- iaries	4 subsid- iaries 3 parent companies	3 co-op. 3 parent companies
Production process	4 modern 4 tradi- tional	All tradi- tional	All modern			
Market	Compet- ition	Compet- ition	Monopoly			
Exports	2 export over 25% of their production	low	nil			
Accounting System 1977				Management 50%	Traditional 75%	Traditional 66%
Age of equipment						Modern 85%
Integration				Integrated 81%	All inte- grated	
Selling System				Salesmen 87.5%	Salesmen 75%	
Stock control				Traditional 68%	Traditional 62.5%	
Materials handling				Mixed 56.3%	Manual 62.5%	
Size						
< 100	12.5%	22.2%	50.0%	—	—	50.0%
> 200	37.5%	11.1%	50.0%	—	—	50.0%

single undertakings (thus in terms of power, they have little control over the market—not one belongs to a financial group or chain). Lastly, although they are almost all limited companies, there is one individually-owned company. The food sector falls between these two: half of the undertakings have a modern production process, the market is competitive, but two out of eight undertakings export more than a quarter of their production. For the most part, they are medium size (100-200 employees) but three of them (37 per

Hotel/ Restaurant	Banks	Insurance companies	Hospitals	Repairs	Laundries	Other services
10	5	4	3	4	4	4
9 Ltd. Co.	1 public 3 multi- national	2 multi- national 2 Ltd. Co.	2 public	4 Ltd. Co.	2 Ltd. Co. 2 indivi- dual	1 public 1 Ltd.Co. 1 trans- national
9 single under- takings	4 parent companies	2 single under- takings	All single under- takings	3 single under- takings	2 single under- takings	3 single under- takings
Traditional 90%	Management	3 Manag- ement	Management	3 Manag- ement	Traditional	traditional 75%
Modern 80%	Modern	Modern	Modern	Traditional 50%	traditional 50%	Modern 75%
50.0%	20.0%	75%	—	75%	100%	100%
10.0%	60.0%	—	66.7%	—	—	—

cent) have more than 200 employees. The majority are limited companies, but there are one multinational and one public undertaking. Lastly, with regard to their type (autonomy), three are part of a national group and two are the main operations in a chain of branches.

In the case of services, a distinction can be drawn in the same way between (1) a "modern" sector: i.e., modern equipment, system of management accounting, mostly large-size undertakings, higher than average proportion of

parent companies or subsidiaries, higher than average proportion of multinationals or public undertakings. Examples: banks, insurance companies (except with regard to the size criterion), hospitals (except for the "type" criterion, for obvious reasons); (2) traditional sectors: small size, orthodox equipment and accounting system, 50 per cent individually-owned undertakings. Example: laundries; and (3) semi-modern, semi-traditional sectors: transport, hotels/restaurants, repairs, other services.

In the case of trading establishments, the results are more difficult to interpret inasmuch as wholesale establishments do not differ from retail establishments except that slightly more of them have a system of management accounting or a mechanised or mixed system of materials handling. In addition, there are slightly fewer small wholesale undertakings. One of the important features of the trade sector as a whole is, however, the high proportion which are either subsidiaries of a national group or the main branches of a chain. The retail trade would seem to be dominated by national groups (4/8) whereas the wholesale trade is in the hands of national groups, chains and multinational companies. This is consistent with the fact that the vast majority of these establishments are integrated upstream or downstream with other trade undertakings and it denotes a fairly tight control of the distribution system.

2. Typology of undertakings

In our typology of the sectors we made a certain number of implicit assumptions, such as:

- (a) Public undertakings and multinationals are more modern than individually-owned undertakings and perhaps, in certain cases, than limited companies;
- (b) main undertakings or subsidiaries of a national group are, on the face of it, more "powerful" in terms of organisation and market position than single undertakings. They will thus have a specific type of behaviour;
- (c) large-size undertakings are more likely to be modern than small-size undertakings.

It might be worth while checking some of these assumptions and, to do this, we calculated the coefficients of correlation between the variables: those variables which have the highest correlation with all the others will be those which best characterise the undertakings (Table 9).

(a) Industry. An analysis of these industrial undertakings in terms of their status and their system of production shows that three out of four public undertakings have a system of continuous flow production. The same is true for the multinationals, whereas the individually-owned undertaking has a traditional production system. In view of the small number of observations and the predominant influence of the sector to which an undertaking belongs, it is not really possible to draw any general conclusion. An analysis of the production process in relation to the type of undertaking is more significant

TABLE 9. Coefficient of correlation between variables

Industry	Trade		Services		All Sectors		
Type/ownership	-0.457	Assets/type Assets/main activity	-0.329 ¹	Assets/ownership	0.711	Assets/ownership	0.493
Ownership/mfg. process	0.376 ²	Assets/system of selling	0.3739 ²	Assets/type Assets/system of accounting	0.547	Assets/type Assets/coefficient of modernity	-0.506
Ownership/size	0.4275	Assets/size System of selling/ main activity	0.421	Assets/age of equipment	0.606	Assets/size Size/coefficient of modernity	0.4681
Type/assets	-0.656	System of sel- ling/system of accounting	-0.433	Assets/size	0.525	Assets/size Size/coefficient of modernity	0.5827
Type/manufact. process	-0.777	System of mat. handling/stock control	0.414	Ownership/main activity	0.763	Ownership/coefficient of modernity	-0.3327
Type/size		Size/stock control		Ownership/age of equipment	-0.3138	Ownership/coefficient of modernity	-0.310
Assets/mfg. process	0.5686	System of mat. handling/inte- gration	0.525	Ownership/size	0.3102	Type/coefficient of modernity	0.3570
Assets/market	-0.691	Size/integration	0.385	System of account/ type	0.3744		
Assets/size	-0.5061	Size/integration	0.4675	Size/system of account- ing	0.4837		
Market/activity	0.7214		0.4799	Size/age of equipment	0.356		
Sectors/export	-0.789				-0.417		
Mfg. process/ market	-0.3785 ²						
Market/size	0.6183						
	-0.3603 ²						

1 Not significant at 10 per cent

2 Not significant at 5 per cent

($R = 0.77$): main establishments all use a modern technological process, whereas the same is true of only 7 per cent of single undertakings. Similarly, subsidiaries of a national group are much more likely to employ modern technology (66.7 per cent).

The analysis of an undertaking's size in relation to its status shows that ($R = 0.427$) public undertakings are much more likely to be large, the individually-owned undertaking is small (less than 50 employees), and the multinational undertaking is of medium size, as are the majority of limited companies. Here again, the analysis according to type is more meaningful: main undertakings as well as subsidiaries of a national group are significantly larger than single undertakings ($R = 0.568$). Lastly, comparing size with system of production shows that the larger an undertaking is, the stronger the possibility of its having an advanced technology. It would therefore seem that, in the case of industry, the most significant characteristics defining a firm are the total assets, the type of organisation, the manufacturing process, the type of product, the size and, to a somewhat lesser extent, the corporate status.

(b) *Trade*. In the trade sector, the legal form of an undertaking is not correlated significantly either with its size or with any of the indicators of modernity. The same is true of its type (with the exception of the relationship with the degree of integration).

However, two variables are significantly correlated with the coefficients of modernity: this is the case for assets on the one hand and size on the other. These two variables indicate the size of an undertaking, the one in terms of capital and the other in terms of number of employees. The larger an undertaking's assets or workforce, the greater is the likelihood that its materials handling system and its method of stock control will be fully or partially mechanised and also the greater the likelihood that it has a system of management accounting.

The analysis of the degree of integration shows that there are undertakings which are not integrated at all, but that these represent only 16.7 per cent of the total. Of the others, some are integrated at one level, either with importing or with trade partners (58.4 per cent), some at two levels (20.9 per cent), and others even at three levels (4.2 per cent)—production, importing and trade. The relationship between integration and status is not significant (the very most that could be said is that multinationals are all integrated at one level only). The analysis by type shows that subsidiaries are more integrated than other types of organisation (main or single undertakings). In fact, almost all the undertakings integrated at two or three levels are subsidiaries. The part played by national groups controlling not only the retail trade but also production or importation or the wholesale trade is perhaps one of the most marked features of Panama's distribution system. Generally speaking, the size of these undertakings is not very large since the emergence of such groups, composed of a large number of small undertakings, is a reaction to fiscal

regulations which tend to impose progressively heavier tax burdens in relation to a company's size.¹

(c) *Services.* The analysis of the accounting system in relation to the legal form of the undertaking reveals a significant difference between public undertakings, multinationals which in general have a system of management accounting, and individually-owned undertakings, co-operatives and even limited companies (70.8 per cent of them) which have a traditional system of accounting. Similarly, when one analyses the age of equipment, one sees that public undertakings, multinationals and co-operatives all have modern equipment, whereas this is less frequently the case with individually-owned undertakings (50 per cent) and limited companies (70.8 per cent). This is perhaps linked to the fact that these limited companies and the individually-owned undertakings are both generally small operations, whereas the public undertakings and the multinationals all have more than 50 employees (50 per cent of the public undertakings and 33 per cent of the multinationals have more than 200 employees). A similar relation can be observed between the system of accounting or the age of equipment and the size of the undertaking: the likelihood that an undertaking will have a system of management accounting increases with its size—from 25 per cent in the case of those with less than 50 employees to 62.5 per cent for those with 100-200 employees and 66.7 per cent for those with more than 200 employees. By the same token, all of the undertakings with more than 100 employees have modern equipment. An analysis of the system of accounting in relation to the type of undertaking does not reveal any truly significant differences. It would therefore seem that, in the case of services, the most significant characteristics for an undertaking are the status, total assets, size and age of equipment.

(d) *All sectors.* In order to be able to compare broad sectors of production, a composite coefficient of modernity was built up taking into account the production system in the case of industry, the system of selling, the method of stock control and the systems of accounting and materials handling in the case of trade, and the age of equipment and system of accounting in the case of the services. In this way, all the undertakings in the sample can be classified on the same scale—modern, semi-modern, traditional. In the case of industry, eight undertakings are classed as modern (38.1 per cent) and the remainder (61.9 per cent) as traditional. In the trade sector, only three out of 24 undertakings are considered as modern (12.5 per cent), 12 semi-modern (50.0 per cent), and nine as traditional. Finally, in the service sector, 16 out of 40 undertakings (40 per cent) are classified as modern, 18 as semi-modern (45 per cent), and 6 as traditional (15 per cent). Relating this coefficient of modernity to the legal form of an undertaking shows that:

1. 55 per cent of the limited companies and all the individually-owned undertakings have less than 50 employees

- 80 per cent of the public undertakings are modern (only 10 per cent traditional);
- no individually-owned undertaking is modern, the majority are traditional; 80 per cent of the multinationals are modern (and 20 per cent traditional); limited companies are found in all three categories with the mode in the semi-modern;
- differences in relation to the type of undertaking are less marked: 60 per cent of main undertakings are modern; subsidiaries and branches are for the most part semi-modern; and lastly, single undertakings are 49 per cent traditional and 31 per cent semi-modern.

Finally, the analysis in terms of size shows that the bigger an undertaking is, the more the probability of its being modern will increase: e.g., from 13 per cent in the case of small undertakings to 75 per cent in the case of undertakings with more than 200 employees.

Thus, despite the diversity between sectors of production and the conditions prevailing within each, significant relationships exist between some characteristics of an undertaking, such as its ownership, type and size and its level of technology. This would tend to support the theory that the choice of technology is a deliberate decision on the part of the undertaking and not merely the result of production imperatives: it is not therefore neutral from the organisational point of view.

B. Occupational structure

Occupational structure varies significantly from one sector to another: we shall first of all therefore examine these separately in relation to the main activity of the undertakings. Subsequently, taking a few selected sectors, a more detailed analysis will be made of the variations within a sector in relation to the characteristics of the undertakings.

1. Analysis of employment patterns per sector

Table 10, which summarises the occupational structure, reveals significant differences between sectors with regard to the division of labour:

1. The proportion of senior staff (management, senior administrative staff, professionals¹) is, as might be expected, much higher in the service sector than in industry and higher in trade than in industry. However, there are substantial differences even within the main sectors. In the case of industry, for example, the proportion of senior staff is much higher in the water and electricity sector than in clothing and food. In the case of trade, the difference is not significant between wholesale and retail establishments. On the other hand, in the case of the services, the sectors of banking, insurance and health have a particularly high proportion of senior staff. It is noticeable that this variation between sectors ties in with the typology

1. Scientific and technical staff.

TABLE 10. *Distribution of employees by occupation and sector, 1977 (percentages in italic figures).*

	Food	Clothing	Water-Electricity	Wholesale trade	Retail trade	Transport	Hotels	Banking	Insurance	Health	Repairs	Laundries	Other services
Management, admin., and senior executives	89 4.5	27 2.0	242 5.8	104 8.0	47 8.3	30 3.0	66 6.2	241 16.5	35 10.1	28 3.4	32 8.7	8 6.2	12 4.9
Professionals	40 2.0	7 0.5	520 12.5	—	1 0.2	2 0.2	5 0.5	154 10.5	16 4.6	212 25.6	5 1.4	—	15 6.1
Supervisors	143 7.3	88 6.6	135 3.3	97 7.5	24 4.2	27 2.7	93 8.7	100 6.8	12 3.5	50 6.0	23 6.3	4 3.1	19 7.8
Management services	206 10.5	78 5.9	862 20.8	316 24.3	138 24.3	78 7.8	115 10.8	410 28.0	60 17.4	81 9.8	40 10.9	11 8.5	17 7.0
Skilled workers	142 7.2	216 16.3	1050 25.3	167 12.8	79 13.9	178 17.7	47 4.4	447 30.5	135 39.1	287 34.7	190 51.6	28 21.5	50 20.5
Unskilled workers	843 43.0	825 62.3	714 17.2	338 26.0	72 12.7	565 56.2	221 20.7	35 2.4	12 3.5	110 13.3	44 12.0	36 27.7	107 43.9
Maintenance	200 10.2	25 1.9	542 13.1	28 2.2	46 8.1	29 2.9	122 11.4	71 4.8	2 0.6	44 5.3	22 6.0	14 10.9	19 7.8
Sales Staff	296 15.1	59 4.5	82 2.0	239 18.4	162 28.5	96 9.6	397 37.2	6 0.4	73 21.2	6 0.7	12 3.3	29 22.3	5 2.0
Total	1 959 100	1 325 100	4 147 100	1 300 100	569 100	1 005 100	1 066 100	1 464 100	345 100	827 100	368 100	130 100	244 100

outlined in the first section: it is the "modern" sectors—water, electricity, banking, insurance and health, which employ the largest proportion of senior scientific and technical personnel in particular.

2. The proportion of middle-level support staff varies more between category of activity within the same main sector than between the main sectors themselves (with the exception of trade). It will be noticed that this proportion is very high in all the modern sectors (water, banking, insurance) as well as in trade. With the exception of these few sectors, the differences are not significant—one will observe however that the lowest proportion is in the clothing sector.
3. The number of salesmen is directly linked to the main activity. As one would expect, this category of staff is large in the sectors of trade, hotels-restaurants (restaurant staff), insurance and laundries.¹ However, two observations need to be made in this context: firstly, that the substantial number of salesmen in the food industry is a result of the fact that manufacturers themselves handle distribution of their products, which is not so in the case of the clothing industry—they thus have better control of their market. The second observation concerns the role of salesmen in the wholesale trade, which is much less important than in the case of the retail trade. It will be seen, however, that the number of unskilled workers (storemen) is much higher in the wholesale trade.
4. The percentage of workers (skilled or unskilled) depends on the main activity and also on the production process. In the case of industry, for example, the proportion of workers is very high in the clothing sector where output is entirely produced in series, higher even than in the food industry where half of the undertakings have a continuous process of production, and above all higher than in the water and electricity sector where production is entirely continuous flow. The percentage of unskilled workers is higher in food than in clothing and of course higher than in water and electricity: this difference is probably due more to the type of activity than the production process. Even when production in series is used, the process of manufacturing clothing requires a certain degree of skill and ability from these workers—tailors, etc.—which is less the case with a food manufacturer, whether he is using a system of line or even continuous production. The third sector, however, even with a continuous process of production, employs a large number of qualified electricians.

In the case of trade, mention has already been made of the fact that the percentage of workers is much higher in wholesale than in retail undertakings and that this is due to the wholesaler's basic function, which is the handling and storing of goods. This also explains why the proportion of unskilled workers in the wholesale trade is high whereas in the retail trade

1. These are not however the same type of salesmen. Insurance agents, for example, are not comparable in terms of qualifications with a manufacturer's commercial travellers, retail or wholesale salesmen or restaurant staff.

the existence of an after-sales service¹ requires the presence of skilled workers.

In the case of services, the situation varies considerably depending on the main activity. Certain sectors have a small "worker" category which, for the most part, is skilled labour—this is the case with banking, hospitals, insurance: these are not "workers" in the strict sense of the term but basic production staff, office-workers, junior nurses, etc. Other sectors have a large worker category and differ from other services in that their employment pattern resembles that for industry. This is the case for example with transport, repair shops and other services² which employ drivers, manual workers (unskilled workers) and mechanics (skilled workers).

5. Supervisors as a percentage of a total number of employees vary relatively little between sectors, ranging from 2.7 per cent in the case of transport to 8.7 per cent in the case of hotels. This percentage, however, is not really significant—it is much better to calculate the ratio of the number of supervisors to the number of persons under their direct supervision. This ratio (see Table 11) varies in fact to a far greater extent, from a low of 3.1 per cent in the case of transport to a high of 17.9 per cent in banking. What is more, where the services are concerned, the variations between sectors are as great as those between services and industry or trade.

2. Analysis of occupational structure in relation to the characteristics of undertakings

Three ratios were used to analyse the variations in occupational structures in relation to the characteristics of undertakings:

- the ratio of supervision of the basic workforce by the technical staff (management, senior administrative staff, professionals) i.e. the supervision of operative personnel by staff responsible for designing company policy;
- the ratio of supervision of the basic workforce by the supervisory staff (hierarchical authority and technical quality control);
- the ratio of middle-level support staff (book-keeping, secretarial etc.) to total personnel.

As a first step, we carried out an analysis across the sectors of activity, computing the coefficients of correlation between each of these ratios and the different characteristics of undertakings, such as their size, status, type, total assets, sector of activity and coefficient of modernity (see Table 12).

It is interesting to note that few of the correlation coefficients are statistically significant. The staffing ratio for supervisors in fact does not seem to correlate significantly with any of the characteristics of undertakings. The

1. The largest retail establishments are those selling cars.

2. The proportion of "workers" in hotels-restaurants cannot be directly compared with the figure for other services because the basic production staff has been classified in both the worker and salesmen categories.

TABLE 11. Staffing ratios by sector (percentages).

		T ₁	T ₂	T ₃
Industry	Food	8.7	6.0	9.7
	Clothing	3.0	2.4	7.8
	Water	31.9	10.1	5.7
Trade	Wholesale	13.5	13.5	12.6
	Retail	13.4	13.1	6.7
Services	Transport	3.7	3.5	3.1
	Hotels	9.0	8.4	11.8
	Banking	70.7	43.1	17.9
	Insurance	23.0	15.8	5.4
	Health	53.7	6.3	11.2
	Repairs	13.8	11.9	8.6
	Laundries	7.5	7.5	3.7
	Other services	14.9	6.6	10.5
Total		20.3	10.0	8.5

$$T_1 = \frac{\text{Senior administrative staff + Management + Professionals}}{\text{Production + Maintenance + Sales staff}}$$

$$T_2 = \frac{\text{Senior administrative staff + Management}}{\text{Production + Maintenance + Sales staff}}$$

$$T_3 = \frac{\text{Supervisors}}{\text{Production + Maintenance + Sales staff}}$$

TABLE 12. Coefficients of correlation between staffing ratios and the characteristics of undertakings

Staffing ratio	T ₁ Technical staff	T ₂ Supervisors	T ₃ Support staff
Size	0.209	0.018	0.205
Status	0.281	0.244	0.056
Type	-0.320	-0.003	-0.648
Age of equipment	-0.163	0.282	-0.304
Total assets	0.532	0.233	0.599
Main activity	0.351	0.162	0.110
Coeff. of modernity	-0.399	-0.199	-0.389

NOTE The critical level at which correlation coefficients are significant, in statistical terms, is at 1% 0.372, at 5% 0.331 and at 10% 0.243

staffing ratio for technical staff correlates with total assets, the coefficient of modernity (the more modern the undertaking, the higher the ratio), the sector of activity and the type of undertaking. The ratio of middle-level support staff correlates with the type of undertaking, assets and the coefficient of modernity.

It would seem therefore that the occupational structure ratios which we analysed earlier by sector (and which are the ones generally used for planning education in relation to manpower requirements) have to be used with considerable caution. Within the same sector, the variance of these ratios from the mean may be quite substantial. What is more, the different characteristics of an undertaking will affect these ratios differently, depending on the sector of activity. Despite the smallness of the sample, this is what is revealed by the analysis of the occupational structure ratios within each sector in relation to the characteristics of the undertakings. For this analysis, eight sectors were chosen, either because they contain a sufficient number of undertakings, or because they represent a large number of jobs: food, clothing, water, electricity, wholesale and retail trade, transport, hotels/restaurants and banks.

(a). *Ratio of supervision by technical staff.* As we have already seen, this ratio varies considerably from one sector to another. It also varies significantly within the same sector in relation to the characteristics of the undertakings.

In the case of industry, the ratio is higher in modern undertakings with a continuous flow production process than in the traditional undertakings: e.g., in the food sector it can vary from 4.2 to 11.0 per cent. Although it seems to have little relation to the size of an undertaking, it varies significantly with the status: e.g., the multinationals have a higher ratio than limited companies and public undertakings. In relation to the type of undertaking, main establishments have the highest ratio—as much as three times the rate for single establishments or branches. This can be easily explained by the fact that these main undertakings employ the bulk of an organisation's technical staff, whose responsibilities extend to all the undertakings within the organisation, and the ratio should not therefore be calculated solely in relation to the workforce in the main operation. Bearing these comments in mind, one can make a preliminary general observation: the ratio of supervision by technical staff is a real measure of the degree of scientific and technical supervision of the work process and also of the pattern of the division of tasks between planning staff and operative staff. The wider this division is, the higher will be this ratio of supervision: in undertakings with a continuous process of production, for example, with the use of increasingly complex machinery, operative tasks become routine and require little understanding on the part of the production workers. The scientific or administrative planning staff, the research and methods study departments and various administrative departments will increase in size and be responsible for planning and controlling the quality of products. This one recognises as an organisation pattern common to developed countries, and it explains why the highest ratios of supervision are to be

found amongst the multinationals, which have imported methods of work organisation used in other countries, and amongst the main undertakings or subsidiaries, which are generally more highly organised.

The same pattern is found with the banks, where the ratio of supervision is higher in large establishments than it is in small, higher in main establishments than it is in single establishments, and higher in multinationals than it is in limited companies. This reflects the same tendency of jobs to become routine and compartmentalised in the more modern and more powerful organisations, with this tendency to make tasks more routine requiring a greater degree of supervision on the part of highly qualified staff. In the case of the other services, e.g., road transport, hotels/restaurant, the patterns of work organisation are different. In the case of transport, for example, the need for administrative and technical staff varies little by type of undertaking or its level of development. As a result, the effect of size is noticeable: the bigger an undertaking is, the smaller will be its ratio of supervision (economy of scale). A more detailed analysis of each case reveals the important effect that the legal form of the undertaking has, depending on whether it is a co-operative or not. In the first co-operative in the sample, eight technical staff supervise 250 drivers and mechanics (supervision ratio = 2.9 per cent, comparable to the level in other limited companies or public undertakings of the same size). In the second co-operative, the drivers, who own their own vehicle, perform a certain number of basic tasks between them, e.g. administration, marketing, repairs: 9 "technical staff" therefore control 12 mechanics and ticket salesmen, i.e. an apparent ratio of supervision of 75 per cent. This last example—on the basis of which no general conclusions can obviously be drawn—is nevertheless a good demonstration of the crucial influence of an undertaking's organisational structure.

In the case of hotels/restaurants size would appear to have the predominant influence, but in an opposite way to that in the case of transport. In a small establishment, the owner or the manager will be the only technical staff and it is only in the very large establishments (more than 200 employees) that the administrative services become really important—accounts department, purchasing department, catering department, hotel services, communications, personnel department. If the effect of size is ignored, there appears to be no significant difference by type or status of the establishment—at least not in our sample, where nine out of the ten establishments were single undertakings on the one hand and limited companies on the other.

In the case of trade the ratios of supervision are higher in modern undertakings than they are in semi-modern or traditional undertakings, and this is not surprising in so far as the true criterion of modernity is whether the handling of stock is mechanised or not; undertakings with a mechanised system will usually have a larger administrative and technical staff—this reflects an operation which is better managed and better planned. The effect of size is somewhat paradoxical: the ratio is high for small undertakings and it diminishes as the number of employees increases; but, once a certain level

is reached, the ratio starts to increase again, reflecting an expansion of the administrative and technical services and a better organisation of the operation.

The status of the undertaking also plays an important part as in industry and banking it is noticeable that the multinationals have high supervision ratios. The type of establishment has different effects on the employment pattern in the retail trade and the wholesale trade. In the retail trade, main and single undertakings are the ones which have the highest proportion of technical staff; in the wholesale trade, the subsidiaries are the ones employing the most technical staff. In a system of distribution as integrated as the one which exists in Panama, the wholesale establishments (importers, exporters, wholesalers) are the ones who play the leading part and set the policy for the whole sector, and it is not therefore surprising to find that they have such high supervision ratios.

(b). *Ratio of supervision by supervisors.* As with the ratio of supervision by technical staff, the ratio of supervision by supervisors varies significantly between undertakings in the same sector.

In the case of industry, it will be seen that the ratio of supervision (i) is higher in modern undertakings than in traditional undertakings: e.g., in the case of food industries, the ratio can be four times as high depending on whether in series production or a continuous process production method is used. The relatively low ratio in the case of water and electricity stems from the fact that the engineers and technicians classed as senior technical staff are in fact those who directly supervise the production personnel; (ii) increases with the size of undertaking, at least for those with more than 50 employees; (iii) is higher in the multinationals than it is in the limited companies or public undertakings; (iv) increases progressively going up the scale from single undertakings to branches and up to main undertakings.

In the case of banking, the ratio of supervision follows the same pattern as in industry: it increases with size, and increases progressively going from a public undertaking to a limited company and up to a multinational or from the single undertaking to a main undertaking.

In the case of hotels/restaurants, size is the important factor. As in the case of the technical staff ratio, the ratio of supervision by supervisors is high in the small establishments, it then diminishes as the number of employees increases but is very high for the large establishments which provide a range of bar-restaurant, hotel and leisure services etc. The ratio of supervision increases as operations become more compartmentalised and split up into different departments. The type of enterprise—subsidiary or single undertaking—does not seem to have a marked influence once allowance has been made for the effect of size. On the other hand, for establishments of equal size, the public undertaking has a higher ratio of supervision. Lastly, it will be noted that in traditional establishments the ratio of supervision is lower, either because the traditional character of such an establishment

implies a less strict control of the quality of the service or because this control is exercised directly by the management and administrative staff.

In the case of transport, the ratio of supervision is also linked to size: as size increases, the ratio diminishes. A traffic manager and a head mechanic are in fact sufficient to control the operation, whatever the number of employees. Once allowance has been made for the effect of size, it would seem that neither the level of modernity nor the type nor even the legal form of the undertaking influences the ratio of supervision to any significant extent.

In the case of trade, the situation is far more complex: it would appear in fact that the ratio of supervision is related much more to the type of activity than to the technical and organisational characteristics of an undertaking. In the wholesale trade, for example, there are three categories of undertaking: those performing a function of distribution as such, where the work is done mostly by salesmen (e.g. cosmetics, pharmaceuticals, books, stationery); in this category, whose operation is similar to that of retailing, the ratio of supervision by supervisors is relatively low (2 to 5 per cent). Other establishments specialise in the installation of electric or electronic equipment or in the sale of heavy machinery (agricultural machinery): in this category of undertaking most of the employees are not salesmen in the strict sense of the term but rather technical representatives or technicians/engineers responsible for the after-sales service. For this kind of skilled work, the ratios of supervision are very high (from 12 to 18 per cent). The third category comprises mostly import-export undertakings (electronic apparatus, pharmaceuticals) which employ few sales agents but have a number of warehouse personnel (since their operations are to a large extent based on storage and warehousing). In this type of undertaking the ratios of supervision are average (6 to 10 per cent).

The figures showing the variations in the ratio of supervision in relation to the coefficient of modernity, the size of the undertaking, its type or legal form need to be interpreted with caution: e.g., in the wholesale trade, the ratio of supervision in the traditional or semi-traditional establishments would appear to be higher than in the modern establishments—this is due to the fact that purely distributive undertakings (cosmetics, pharmaceuticals) more often have a modern system of management than those which install or sell heavy equipment (in the retail trade, this situation is reversed).

Amongst undertakings with the same kind of activity, the ratios of supervision are higher for multinationals than for limited companies, and for the small undertaking or the very large undertaking the ratio is higher than that for undertakings of average size.

These results can be summarised in the following way: the ratio of supervision by supervisors is a measure of a twin function, which is itself related to the supervisor's twin role; it expresses both the intensity of the technical supervision of operative personnel (advice and control of production quality) and also the degree of disciplinary supervision (control of absenteeism, adher-

ence to performance standards etc.). As a result, a high ratio of supervision will be found in:

- undertakings with complex production machinery (e.g., a continuous flow process in the food industry) or which require a certain skill on the part of their operatives (e.g. clothing, installers — repairers in the wholesale trade);
- undertakings with a considerable division of labour or with a very detailed organisational structure and a large number of specialised departments (e.g. large-scale undertakings in the food industry, water-electricity, hotels-restaurants, banking). This applies in most cases to multinationals, main undertakings or subsidiaries;
- undertakings which have a very strict system of control both of product quality and of the conduct and performance of their workforce. This is generally the case with multinationals (as compared with limited companies and co-operatives) and it is often the case with main undertakings or subsidiaries compared with single undertakings.

(c). *Percentage of middle-level support staff.* The proportion of middle-level support staff within the total staff roughly follows the same pattern as the ratio of supervision by technical staff; the higher the proportion of technical staff, the higher will be the proportion of management services staff. It will be noticed, however, that the proportion of middle-level support staff follows a much more similar pattern between sectors than the previous ratios. It increases going from a traditional undertaking to a modern or semi-modern undertaking (exception: transport), or from a large to a small undertaking (exceptions: transport, banking) or from a single undertaking to a main undertaking or a subsidiary (exceptions: water-electricity, banking).

The analysis by status shows that limited companies are the ones which have the largest proportion of administrative personnel and public undertakings the smallest.

The foregoing analysis of occupational structure is not based on a sufficient number of observations for it to be realistic to attempt to define an organisation model for undertakings by sector. Table 13, however, helps to summarise the results obtained from our sample, and it is possible to draw a certain number of conclusions.

First of all, the main activity is a determining factor in the occupational structure and the pattern of human resource utilisation. This has been the assumption made by manpower planners for many years. It would appear, however, that this is not broad enough to work at the level of a whole sector. In the case of services, there are very wide differences in patterns of utilisation between transport, financial establishments, hotels-restaurants, and other services. Within a sector which might at first sight seem homogeneous—trade—there are wide differences between wholesale undertakings and retail undertakings and within the wholesale trade itself between an establish-

TABLE 13. Characteristics of undertakings influencing the ratios of supervision.

	Industry	Trade	Banking	Transport- Hotels
Technical staff	Technology Status Type	Size Status Type	Size Status Type	Size
Supervisors	Technology Size Status Type	Main activity Status Size	Size Status Type	Size

ment which sells and installs heavy machinery and another which distributes ordinary consumer goods.

Variations within a sector can be as wide as those between sectors, depending on an undertaking's characteristics. One notes that technical characteristics (size, technology), in the case of industry and services, influence the utilisation of technical staff or supervisors. The larger an undertaking is (beyond a certain minimum level), the higher the ratios of supervision will be, suggesting a more elaborate pattern of work organisation, a better control of product quality (and also of operatives' conduct and performance). One of the important conclusions to come out of this preliminary investigation, however, is the fundamental role of an undertaking's organisational structure: the status and, to a lesser degree, the type of undertaking. Whatever their sector, their size or their coefficient of modernity, multinational undertakings have higher ratios of supervision by technical staff and by supervisors than national undertakings. The ratios for public undertakings—with the exception of the somewhat special sector of water and electricity—are relatively lower than those for private undertakings.¹ In the case of limited companies, those with the highest ratios of supervision are the main undertakings and the subsidiaries. The possible implications of this on the method of personnel management, the opportunities for internal promotion and the demand for qualifications will need to be examined in the following chapters.

1. It should be remembered that although these two sectors represent only 23.6 per cent of the undertakings in our sample, they account for 51.4 per cent of the total number of employees in the sample and have considerable importance in terms of employment on a national level

III. Recruitment and promotion criteria

The different degrees of organisational complexity in the undertakings analysed in the preceding chapter obviously influence employers' attitudes towards labour. What is more, employers in Panama do not apply the same policies of recruitment and promotion. In fact, recruitment and promotion criteria will not only vary by occupation within the same company but also, for the same occupation, they will vary from one type of undertaking to another—cf. typology—and in addition, the same employer for the same job will change his attitude over the course of time to take into account changes in the "quality" of available manpower, in the regulations, in the bargaining power of workers, etc.

This means that it is not possible to speak in absolute terms of a "demand" for labour. One has to specify the type of enterprise, the nature of this demand and its socio-economic context. In this respect and from the point of view of educational planning in particular, a number of hypotheses and theories have been put forward in recent years. These have to do with:

1. "The over-emphasis on qualifications" or "credentialism"—"for the same job, employers' requirements with regard to the educational level of job applicants have considerably increased".
2. The place of education in the recruitment and promotion policy. It has even been suggested that if one makes a distinction for each applicant between his ascriptive characteristics, his experience and his educational background, it would be seen that employers tend to attribute more importance than one thinks to non-educational factors in a candidate's eligibility for certain jobs.
3. The consequences of this situation with regard to the relationship between education and the world of work. Certainly the problem of what is called "inflation of diplomas" presupposes an "autonomous" development of the educational system, independently of the world of work. But of the employers' attitudes—in their selection policy—to the "educational aspects" in the job applicant's dossier cannot but influence in the last analysis the form, content and structure of the educational system. With-

out going as far as to accept completely the suggestions of those who think that even the "autonomous" development of education is justified by the desire of employers to have available abundant and cheap skilled labour, one is obliged to admit that the preference shown by employers for a specific worker profile and, more particularly, for a specific educational record cannot avoid influencing the educational system.

The object of this chapter is to provide information on these topics and attempt to assess their validity on the basis of the survey on Panama's industry. In order to do this, the first step will be to make clear the relationships between educational levels and occupation—drawing a distinction between schooling and vocational training, and analysing changes in these relationships over a period of time. The second step will be to classify the cognitive and ascriptive factors in relation to the employer's position with regard to his methods of sifting applications; this will include a breakdown by occupation and type of undertaking. Thirdly, an analysis will be made of the place and importance of non-cognitive factors in recruitment and promotion with the object of building a job profile pattern on the basis of the pertinence of these factors for the categories of job concerned. Lastly, we shall attempt to outline a labour "demand" function for undertakings.

A. Education and occupation: a difficult equation

Table 14 shows the modal distribution for vocational training, i.e., for each occupation, the number of undertakings where the number of employees is maximum for the period of training. For example, in the case of skilled operatives, the figures for one undertaking show that the "mode" is a training of less than three months; for eight undertakings it is from three months to a year; for seven undertakings it is one year and more; and nil in the case of 29. The pattern is very different depending on the occupation, whether one takes account of the "non-responses" or not; there are a large

TABLE 14. Vocational training (modal distribution)

	Less than 3 months	3 months- 1 year	1 year and more	Nil
Management	9	7	22	17
Technical staff	1	—	8	3
Production supervisors	16	13	13	31
Other supervisors	3	2	2	6
Accountants	8	5	14	39
Executive secretaries	2	3	2	5
Secretaries	6	6	7	42
Skilled operatives	1	8	7	29
Unskilled operatives	8	—	3	28
Sales staff	7	—	3	11

number of undertakings where the majority of employees have no vocational training: only 29.8 per cent in the case of management and 23 per cent in the case of technical staff, but 41.9 per cent for production supervisors, 58.2 per cent for accountants, 66.6 per cent for secretaries and 75.6 per cent for unskilled operatives. Lastly, one will note the predominance of short periods of training in the case of supervisors and long periods of training in the case of accountants and senior staff in particular. These findings will later be borne out in the analysis of employers' requirements.

The average period of education obviously varies with the occupation. Table 15 shows the distribution (in average years) for each of the occupations selected. The hierarchy of occupations is relatively well expressed by the number of average years education per occupation, the order being as follows: unskilled operatives, skilled operatives, other supervisors and production supervisors, secretaries, accountants/executive secretaries, management staff, technical staff. Note also the wide dispersion of the educational level within each occupation, except in the case of technical staff (highly qualified) and unskilled operatives. This last fact obviously reflects the differences between sectors of activity, the characteristics of the undertakings, and their personnel policies. A few examples will illustrate this.

TABLE 15. Educational profile of occupation (modal distribution)

Average number of years	Management	Technical staff	Production supervisors	Other supervisors	Accountants	Executive secretaries	Secretaries	Skilled operatives	Unskilled operatives
Less than 5	2	0	0	1	0	0	0	2	4
5-7	1	0	6	1	0	0	1	13	20
7-9	2	0	17	3	3	1	5	13	10
9-11	1	0	7	0	1	0	2	8	3
11-13	7	2	24	4	23	4	33	20	0
13-15	16	2	12	4	34	5	20	5	0
More than 15	28	9	9	1	6	2	2	0	0
Average for the whole	14.6	15.6	11.7	11.2	13.7	13.8	12.6	9.6	6.8
Number of observations	57	13	74	14	67	12	63	61	37

Variations per branch of activity: whereas two-thirds of the hospitals record a modal educational level of "full university" in the case of management, this proportion drops to 50 per cent in the food and agricultural industries and to 29 per cent in retail trade. Applying the same analysis to production supervisors shows that the modal educational level is only partial secondary education for 40 per cent of the hotels-café-restaurants, whereas it is full technical

education for 55.6 per cent in the textile industry and as much as 66.7 per cent in water and electricity (χ^2 level of significance = 3.3 per cent).

Variations by size: a priori, one is inclined to think that large undertakings tend to be more demanding with regard to their employees—this is what would seem to be borne out by the analysis by size of the modal educational level for supervisors (χ^2 level of significance = 1.9 per cent): 79 per cent of the small undertakings (less than 50 employees) report a modal educational level of “full secondary and below” as against 6.7 per cent of the large undertakings (over 200 employees). But a closer look at the data shows that the relationship between educational level and size is not a simple one: it would not appear to be valid for all occupations. Large undertakings with more than 200 employees are more demanding with respect to their senior personnel (technical staff) and relatively less demanding (than small undertakings) with respect to their operative staff (and unskilled operatives in particular). Thus the policy of the large undertakings would seem to result in a wider span in terms of the educational level of their employees than is the case with small undertakings. In other words, the difference between the highest and lowest average educational level is smaller in undertakings with less than 100 employees than it is in undertakings with more than 200 employees.

Variations by status: when one compares the policy of the multinationals with that of the limited companies, one observes that in the case of management 90 per cent of the multinationals report a modal educational level of higher education as against 75 per cent in the case of limited companies; for accountants and skilled workers, the percentages are respectively 16.7 and 7.8, 12.5 and 5. The status of the enterprise is unquestionably a determining factor of the educational level of the workforce.

Variations by coefficient of “modernity”: all other things being equal, the more “modern” an undertaking is, the higher will be its modal educational level. This is shown by the analysis of modernity v. education in the case of accountants (χ^2 level of significance = 3.1 per cent¹). This result is borne out when one examines the pattern for each job category studied.

To sum up: despite the small size of the sample, the analysis of the average educational level and its dispersion in the case of some well-defined and important occupations has shown that (i) there is no simple relation between occupation and education but there is a parallel between the hierarchy of job categories and average period of training; and (ii) the technical characteristics (sector of activity, size, modernity) and the organisational characteristics (legal form) of an undertaking seem to influence the educational level of its employees.

1. It should be noted that this statistical relationship is perfectly consistent with the definition adopted for the coefficient of modernity.

B. Changes in the educational levels for recruitment

In another section of the survey, employers were asked to state what the required level of education was in 1970 and in 1977 for recruitment to each of the occupations studied. The following observations are based on a comparison of these data (see Table 16).

For every occupation, without exception, employers have substantially increased their requirements over a period of about 10 years. Even for occupations which supposedly do not require a solid basic education, e.g., unskilled operatives, 14 per cent of employers were requiring a secondary education from applicants for these jobs in 1977 (as against 3 per cent in 1970). What is more, the number of undertakings requiring higher education is increasing for all occupations, with the exception of operatives. This bears out the comment made in the macro-social analysis of employment in Panama: the educational level of the workforce is relatively high for a country with Panama's economic wealth.

The inflation in the demand for qualifications is borne out by Table 17, which compares employers' requirements in terms of professional training for the various occupations: the percentage of employers providing in-house vocational training programmes has increased in the case of technical staff, supervisors and unskilled operatives. If, in the case of other occupations, this percentage has remained stable or even slightly declined, this is a reflection of the growth in formal school training courses. The number of employers who regard vocational training as being of no value shows a marked decrease.

Whereas the data in Tables 15 and 16 enable us to infer that there is an upward movement in the educational level required for the occupations selected, a mean test (Table 18) applied to each occupation provides positive confirmation of the fact that, between 1970 and 1977, there is in the majority of cases a significant difference between the levels of education required, expressed in terms of the number of years' study. This is consistent with the theory of "credentialism"—that employers modify their requirements independently of their real need for education and in relation to the supply or the level of candidates' education. The education system, developing in an autonomous manner, raises the level of education of the younger generation, which encourages employers to raise their sights.

C. A detailed analysis of the demand

Another way of assessing the relationships between education and occupation is to analyse (i) the importance of education as a criterion in recruitment and (ii) the profiles defined by employers for the various occupations. The undertakings surveyed were asked to supply this information. This consisted in ranking in order of importance education and the other criteria used by employers for "screening" job applicants and then defining the "qualities" of a good worker in a particular job.

TABLE 16. Educational level required in 1970 and 1977 (percentages).

Level	Management		Technical staff		Production supervisors		Other supervisors		Accountants		Executive secretaries		Secretaries		Skilled operatives		Unskilled operatives	
	1970	1977	1970	1977	1970	1977	1970	1977	1970	1977	1970	1977	1970	1977	1970	1977	1970	1977
Primary	2	2	—	—	21	13	20	8	4	2	—	—	2	0	24	20	90	75
Secondary	—	—	—	—	10	7	—	—	2	2	—	—	2	2	17	16	3	14
Bachelor	35	25	33	25	38	36	40	25	39	26	36	17	45	42	36	33	6	8
Partial technical	—	—	—	—	2	3	—	—	4	—	9	—	2	—	4	3	—	—
Full technical	7	6	11	8	20	27	40	58	31	37	45	58	47	53	19	28	—	3
Partial higher	5	4	—	—	3	7	—	8	7	14	0	8	2	3	—	0	—	—
Full higher	51	63	56	67	7	7	—	—	13	19	9	17	—	—	—	—	—	—

TABLE 17. Level of vocational training required in 1970 and 1977 (percentages).

Period	Management		Technical staff		Production supervisors		Other supervisors		Accountants		Executive secretaries		Skilled operatives		Unskilled operatives	
	1970	1977	1970	1977	1970	1977	1970	1977	1970	1977	1970	1977	1970	1977	1970	1977
Nil	58	50	33	33	62	45	90	67	65	60	64	50	74	72	55	43
Less than 6 months	14	23	0	0	8	18	10	8	17	21	18	33	19	22	17	18
6 months and more	9	10	33	25	13	17	0	17	2	3	0	0	2	2	6	8
Formal school course	19	17	33	42	16	20	0	8	17	16	18	17	6	5	23	31

TABLE 18 Level of education in 1970 and 1977—mean test.

	1970		1977		<i>t</i>	<i>R</i>	<i>N</i>
	$\bar{x}\sigma$		$\bar{y}\sigma$				
Management	15.09	2.65	15.54	2.44	11.954	0.8698	56
Technical staff	14.10	2.59	14.90	2.59	3.150	0.7241	13
Production supervisors	10.08	3.19	10.91	2.87	11.756	0.8309	73
Other supervisors	10.11	2.46	11.17	2.52	3.944	0.7802	14
Accountants	12.19	1.60	12.88	2.03	6.881	0.6672	67
Executive secretaries	11.90	1.23	13.50	2.41	1.121	0.3685	11
Secretaries	11.94	0.75	11.92	1.01	4.632	0.5298	62
Skilled operatives	9.51	2.82	9.95	2.51	13.333	0.8796	61
Unskilled operatives	5.41	1.81	6.69	2.33	4.092	0.5985	37
Sales staff	9.20	3.01	10.72	1.85	4.533	0.7208	21

1. Education as a screen

Since it is difficult in an opinion survey to use too precise a yardstick in assessing the rankings which employers assign to each of the recruitment criteria, two methods were adopted: (i) to compute the number of times a criterion was considered as non-relevant in internal or external recruitment for an occupation (Table 19); and (ii) to list the criteria for each occupation in order of importance on the basis of the ranking provided by the employers (Table 20). The following comments can be made:

1. Despite some similarities, employers rank criteria differently depending on whether it is a question of "promotion" or "hiring". Obviously, the criteria of "length of service", "tests" and "supervisor's assessment" apply only to "promotion". On the other hand, the "police record" applies only in the case of recruitment. But, aside from these logical differences, it will be seen that health, age and civil status are far less relevant criteria in the case of promotion than in the case of external recruitment (except perhaps for production supervisors).
2. Generally speaking, the educational level is always taken into account when recruiting for a job. Moreover, when it is considered relevant, it is always ranked first or second amongst the recruitment criteria (Table 20). However, this statement needs qualifying in several respects: (a) firstly, 59 per cent of employers do not consider the educational level as the relevant criterion in hiring an unskilled operative, and 42 per cent when it is a criterion in hiring a skilled operative. Whenever the question of promotion to a job as a skilled operative. Whenever the criterion is applied, it ranks only in sixth position. Thus, for those occupations which represent a large proportion of those in active employment, the educational level of job applicants has little or no importance or, more precisely, employers state that even if this is taken into account, their choice is not based on it. (b) Secondly, education is consistently applied as a criterion less for promotion than for external recruitment—regardless of the

TABLE 19. Non-relevant factors in recruitment for an occupation.

	Management		Technical staff		Production supervisors		Accountants		Executive secretaries		Skilled operatives		Unskilled operatives	
	Recruit-ment	Pro-motion	Recruit-ment	Pro-motion	Recruit-ment	Pro-motion	Recruit-ment	Pro-motion	Recruit-ment	Pro-motion	Recruit-ment	Pro-motion	Recruit-ment	Pro-motion
Health	35	53	43	50	50	37	49	46	40	32	40	31	53	38
Civil status	52	82	100	100	75	71	65	80	60	58	90	74	89	85
Age	22	59	86	66	25	52	32	50	30	28	40	33	63	38
Education	13	20	0	0	17	29	3	10	0	4	10	19	42	59
Men	61	59	71	83	33	52	76	80	100	98	100	64	36	59
Women	96	97	100	100	100	90	81	73	0	14	35	76	94	83
Police record	43	97	86	83	50	97	46	90	70	53	100	48	100	41
English	30	53	28	83	50	56	51	73	0	37	60	57	84	76
Experience	13	35	14	16	58	12	5	23	0	14	30	24	21	41
Length of service	—	29	—	16	—	19	—	37	—	—	35	—	37	—
Tests	—	76	—	66	—	68	—	66	—	—	80	—	68	—
Supervisor's assessment	—	38	—	33	—	30	—	20	—	—	15	—	21	—
No. of observations	23	34	7	6	12	12	37	30	10	43	20	42	19	29

NOTE The figures indicate the percentage of employers who stated that a criterion was definitely not taken into account in promotion or recruitment for that particular job

TABLE 20. Selected criteria ordered according to employers' preference (internal promotion and external recruitment) (5% degree of confidence in the test)

Managers	Education > Experience > Age > Seniority, English, Health > Civil Status
Technicians	Education ~ Experience > Health > Sex
Supervisors of production	Experience > Education, Seniority > Health, Sex, English > Civil Status, Police Record
Other supervisors	Experience ~ Education > Health > Age, Sex > Civil Status, Seniority, English, Police Record
Accountants	Education ~ Experience > Health, Age > Civil Status, Police Record, Seniority, Sex
Qualified workers	Education ~ Experience > Age, Health > Sex > Police Record, English > Civil Status, Seniority
Non-qualified workers	Experience, Health, Age, Police Record > Sex > Education, Seniority, English

occupation. Can one therefore conclude from this that, although education loses its importance once the employer has other elements on which to assess a candidate, it is used at the hiring stage as much as a method of screening as it is for its intrinsic value?

Obviously, it is not by accident that employers rank education as number one criterion for certain job categories and low on the list for others. By placing education at the head of its recruitment criteria industry encourages the "autonomous" development of the educational system and helps to some degree to shape its structure (via its influence on those leaving the various levels of post-compulsory education). By and large, it is to be expected that, at least for certain occupations, there will be evidence of special links between employers and the education system, in the sense that employers will tend (consciously or unconsciously) to look to certain schools for their recruits rather than others; these can be termed their "target schools". Table 21 outlines the typology of these target schools for those occupations where they appear to play a significant role: secretaries, executive secretaries and accountants. In general, one should note the by no means negligible importance of the private sector.

TABLE 21. Characteristics of "target schools" by job category.

	Type of school		Level of education			
	Public	Private	Primary	Secondary	Technical	Professional
Accountants	10	7	—	12	5	10
Executive secretaries	1	5	—	4	2	2
Secretaries	7	18	—	20	14	—

3. As a criterion, professional experience is given a ranking similar to that for education: generally in first or second place. Where it differs, however, is that it is valid for every occupation. It should also be noted that experience is rated ahead of education for certain occupations (production supervisors, unskilled operatives) and behind education for management and secretaries—for all the other occupations, it carries the same weight.
4. Another criterion for measuring candidates' knowledge is their command of the English language. This is an essential criterion for executive secretaries (ranked as No. 1 criterion) but it is also often specified for management and technical staff.
5. The police record seems to be required for production jobs—it is ranked first for unskilled operatives and sixth for skilled operatives. However, it would also appear to be relevant for management, accountants and production supervisors. Sex is an important criterion for executive secretaries, secretaries, production supervisors and operatives (both skilled and unskilled), no doubt for socio-cultural reasons.

Health is an important criterion of selection for every occupation—it is even ranked in first place for unskilled operatives, in third place for technical staff, accountants, etc.

Civil status does not appear to be very relevant as a criterion, whereas age, on the other hand, seems to be an important criterion, particularly for initial recruitment (except perhaps in the case of technical staff). It is a criterion of prime importance for unskilled operatives, but it is also determinant for management, accountants and skilled operatives.

6. With regard to internal recruitment, the supervisor's assessment and the length of service—both factors which help to ensure that the person conforms with the performance standards required for each occupation—are important criteria since, amongst the criteria most often mentioned, they are ranked second and third for secretaries, skilled operatives, supervisors, accountants and management. This is highly indicative of employers' true scales of preference and the manner in which their demand functions are expressed

When they recruit from outside their organisation, they have, as it were, to base their judgement on the applicant's dossier. Professional experience, certificates and references, diplomas, education, etc. can be used as means for screening candidates and are cognitive factors to be taken into account when recruiting personnel. But age, sex, police record and health record are also factors (non-cognitive) which are far from unimportant; this is particularly true for access to unskilled operatives' jobs, but it is also true for access to the jobs of supervisor, accountant, secretary and skilled operative. Basically, what the employer is looking for are applicants whose profiles correspond most closely to the standards he has laid down for the vacancies he wants to fill, and these standards concern cognitive, ascriptive and non-cognitive aspects. Some jobs are closed either to men or to women; for others, character references are required... Thus a rift develops between

occupations: for management and technical positions, education and experience head the list; however, non-cognitive factors play an important part in selection: sex, health, police record. For production jobs, ascriptive and conduct criteria are paramount, i.e. police record, sex, health.

On the other hand, in the case of internal recruitment one is on firmer ground; naturally, the person's dossier has still to be evaluated, but one has concrete data on his performance: experience, length of service and the supervisor's assessment, which confirm whether the person meets the required standards. These standards, moreover are likely to be behaviour standards (i.e. non-cognitive).

In the next section it will be seen that these distinctions—or rifts—will be reflected in the behaviour standards laid down for workers in the various occupations.

To conclude this section, one question still remains to be answered, since so far we have been referring to employers' policy without making any distinction between them. Are methods of recruitment the same irrespective of the type of industry?

In order to assess the importance attached to the different criteria in a recruitment policy, we have confined our analysis to those occupations for which sufficient data are available. Basically, there is a difference between the public sector—no doubt highly structured and systematised—where, on the one hand, the non-cognitive criteria, and, on the other, sex, police record and length of service play an important role in access to jobs, the private sector (limited companies)—with its greater variety—and the multinationals which place greater emphasis *relatively speaking* than the limited companies on experience and education and attach greater importance to knowledge of a foreign language.

Lastly, and for the same occupations for which sufficient data were available, the relevance of the criteria has been assessed by analysing the percentage of non-response (or criteria not used) giving a breakdown by size of undertaking, the main activity, status and coefficient of modernity.

It is clear for example that the sector has an important bearing on the "non-relevance" of certain criteria; as do, but to a lesser degree, size, status and the coefficient of modernity. However, it should be noted that the relevance of the education criterion is generally not related either to the sector, or to the status or to the modernity—this could mean either that the importance attached to this criterion is somewhat exaggerated or that its relevance is so widespread that the level of "non-response" is not related to the characteristics of the undertakings. The truth probably lies somewhere between these two hypotheses.

2. *Aptitudes and attitudes required*

To complete this presentation of employers' "demand function" for the various job categories, a list of eleven "character traits" (attitudes, personal qualities, aptitudes) was submitted to respondents with the request that they

indicate those which they regarded as the most relevant. The results are summarised in Table 22, broken down by occupation and internal v. external recruitment (a non-relevant trait is rated zero). In view of the limited number of replies, comments will be confined to the following occupations: management, production supervisors, accountants, secretaries, skilled operatives and unskilled operatives.

(a) *Management*: this is a position filled mainly from within the organisation. The four traits with the highest scores are "leadership", "initiative", "dedication" and "efficiency"; the four traits with the lowest score (and which are therefore not qualities for the job) are "ability to communicate", "good nature", "discipline" and "ambition". The senior executive is expected to "internalize" with the values of the company and be efficient in his work.

(b) *Production supervisors*: this too is an occupation recruited mainly from within the organisation. The similarity with the preceding occupation is striking; however, there is one significant exception: "personal appearance" counts for more in the case of management and "discipline" more in the case of production supervisors, who need no doubt to set an example on the shop floor.

(c) *Accountants*: recruitment for this position is not mainly from within the organisation. However, an accountant appointed from within the company is expected to show "efficiency", "dedication", "punctuality" and "initiative"—but there is no special call for "ability to communicate", "good nature", "personal appearance" and "human relations". In the case of an outside appointment roughly the same traits are required with two exceptions: "personal appearance", which becomes important, and "leadership", which is no longer relevant. Although the accountant's "image" is close to that for the positions mentioned earlier, there is however one significant difference: the emergence of "punctuality" as a relevant trait. One is still anxious to find a person who will "identify" with the values of the company, but he is expected to "obey the rules".

(d) *Secretaries*: are recruited either from within the organisation or from outside. They are not expected to have "leadership", but above all they must have good "human relations", be "efficient", have "initiative" and "dedication". What therefore characterises the profile of a good secretary, in an employer's eyes, is an ability to perform her task adequately (human relations, efficiency), without going as far as to "identify" with the values of the company.

(e) *Skilled operatives*: this is a large occupation in terms of numbers and is recruited both from within and from outside the organisation. Here we get insistence on the need to obey and respect the rules, since "discipline" and "punctuality" are the two qualities which are emphasised whatever the source of recruitment. On the other hand, "initiative" disappears from the list of the four traits with the highest scores.

(f) *Unskilled operatives*: recruited for the most part from outside the organ-

TABLE 22. External and internal recruitment: aptitudes and attitudes.

	Management		Technical staff		Production supervisors		Other supervisors		Accountants		Executive secretaries		Secretaries		Qualified workers		Non-qualified workers	
	E	I	E	I	E	I	E	I	E	I	E	I	E	I	E	I	E	I
Punctuality	17	14	5	2	8	38	7	5	29	22	8	2	36	11	32	14	21	4
Discipline	17	10	6	3	3	32	7	5	26	20	6	2	29	8	35	14	22	6
Human relations	18	18	6	3	10	33	6	4	25	11	10	2	29	13	29	10	11	5
Initiative	18	22	5	4	8	38	8	4	30	21	8	2	35	12	26	13	10	5
Efficiency	14	20	6	6	7	43	6	3	28	26	8	1	33	13	29	15	15	6
Devotion to duty	14	22	6	4	6	41	6	5	30	26	8	2	33	12	30	18	20	7
Personal appearance	17	14	3	3	8	17	6	1	28	10	10	1	37	8	26	5	13	2
Ability to communicate	15	4	5	1	5	5	8	1	21	6	5	1	31	1	21	1	11	0
Good nature	18	4	5	1	7	6	6	2	25	7	9	1	31	2	26	3	18	2
Ambition	13	12	2	4	3	22	5	1	24	16	6	1	19	8	15	6	6	2
Leadership	3	27	0	5	3	52	2	5	4	12	1	1	0	2	0	2	0	0
Non-response	23	34	7	6	12	62	8	6	37	29	10	2	43	16	42	19	29	8
I: E: external, I: internal																		

isation. Note both the similarity with the foregoing category and "good nature", which becomes important as a quality—probably in the sense of "no trouble", "capable of taking orders", etc.

Thus as one moves across the range of occupations selected one passes from the profile of the "top-rank" members of the staff, who are not bound by the rules and regulations but who are expected to "internalize" the values of the company, be capable of leadership, etc., to the "subordinate" worker at the other end of the scale who has to accept the constraints of his job ("discipline", "punctuality") and carry out his duties without creating difficulties ("good nature"). Employers look upon this hierarchy of conduct as essential to the proper functioning of their business; it is of no concern in this present context whether this hierarchy is of historical, sociological or some other origin—what is important is that the employer thinks that this ranking of job profiles is beneficial to his company, almost to the extent of influencing its profitability; he will do all he can to maintain and strengthen it, since it enables him to achieve his management objectives.

3. The outlines of the demand function

If one accepts this argument, one can advance a further stage in understanding the logic underlying employers' behaviour with respect to their manpower policy—as this applies to internal and external recruitment.

Generally speaking, whatever the characteristics of the production unit, an employer will attempt to formulate his demand either by directly specifying the aptitudes and attitudes required from his workers (the hierarchy described above) or by specifying the qualifications which, in his opinion, are associated or correlated with these aptitudes and attitudes—the selection and recruitment criteria discussed earlier. As we have seen, these criteria are numerous and have to do with an individual's ascriptive, cognitive and non-cognitive attributes. If efficiency is a required performance standard (trait) and if an employer considers that, for technical staff, efficiency is linked with "diplomas", for supervisors with "length of service" and for operatives with "age" or "sex", he will rank these criteria in accordance with these patterns of association. This explains why ascriptive criteria will take precedence over cognitive criteria or cognitive criteria outweigh non-cognitive criteria, depending on what occupation is involved.

But an employer does not come by his opinion accidentally—it is linked to sociological and cultural factors, e.g., "you don't put a women supervisor at the head of a workshop composed of men", or "you have to make sure that your accountant is honest by checking on his police record", or "you cannot assess workers, whatever their level, on whether they have ambitions or not", etc.; it is also linked to the technical and organisational features of an undertaking which determine both occupational structure (see previous chapter) and the performance standards required from workers for the proper functioning of the organisation.

To express this in its simplest terms: in industry, supervisors are the

“key” to the proper functioning of the production process; they provide the link between management and workers; one will expect them to have a composite standard of conduct and attitudes overlapping those of management and workers; it is important for the employer to make a careful selection of candidates for these key positions: emphasis will be put primarily on job experience and length of service within the company; an employer tends to regard the other categories of job, e.g., secretaries, accountants, as being, to some extent, peripheral—outside the line of authority management-supervisors-workers.

Obviously, these statements need to be qualified and amended in relation to the sector of activity, e.g., food products, clothing or electricity, if for no other reason than the fact that certain sectors are composed mainly of small family undertakings where there is an overlapping of tasks between “owner”, “technical staff” and “supervisors” (and sometimes “secretary”, “sales staff”); or in cases where the relationship between employer and employees is, so to speak, “off-market” (“we employ members of the family” or “through personal recommendation”); or in cases where the sector is made up of large modern undertakings—whether these are national or partly foreign-owned, highly capital-intensive and employing up-to-date management and production techniques; or, lastly, where one is dealing with the public sector with its codes, rules and standards.

In the case of the wholesale trade, the problem is at a different level: that of negotiating deals and supply contracts; that of maintaining good relationships with government administrations and the banks; there are those who “handle the business end”—the management and others, and there are those who “handle the goods”—the workers at the lower end of the scale, who may be temporary and whom the concern to some extent considers only as hired hands; all of this will obviously influence the kind of aptitudes and attitudes required, the types of profile which employers are looking for and, as a consequence, the nature of their demand. For example, for workers at the lower end of the scale, “education” will be less important as a criterion for recruitment than “sex” or “age” or “health”.

Industry’s labour demand function is highly complex and it would be unrealistic to attempt to reduce this to an equation. However, on the basis of the data contained in this chapter, one can attempt to draw up a simple outline.

Demand is characterised by a ranking of occupations around one (or several) key positions within the organisation. At the top of the scale, emphasis is placed on character traits, aptitudes and attitudes such as “identification with the values of the company”, “initiative”, “efficiency”; the “key position” (which is the “supervisor” in the case of industry) requires a combination of traits linking him both with management and with personnel at operative level; the peripheral occupations with their specific traits, e.g., “personal appearance”, “integrity”; the lower end of the scale, where emphasis is put on traits such as “discipline”, “punctuality”. This ranking of occupations,

which is reflected in the ranking of aptitudes and attitudes, contributes (in the employers' view) to the smooth and efficient functioning of the organisation. What it represents is the employer's basic demand, although this is never stated explicitly in these terms. To translate and formulate this in terms of a recruitment policy, an employer will use a set of criteria in association with these character traits and attitudes.

For positions at the top end of the scale, the cognitive criteria will be of prime importance: education and professional experience, since these are associated with the attributes for these occupations: long education + experience = aptitude for executive position. For the "key positions", the cognitive and ascriptive criteria will be important, but in view of the particular nature of this type of job, they will generally be filled via internal promotion, which means that non-cognitive criteria can be used to assess the candidate's suitability (supervisor's assessment). For the peripheral occupations, the cognitive criteria ought normally to be sufficient; however, for socio-cultural reasons, the ascriptive criteria (sex) would also be used. Finally, for subordinate positions, the ascriptive and non-cognitive criteria will play a part at least as important as the cognitive criteria and will feature in the employer's explicit demand.

Despite the small number of observations ($N = 57$), stepwise regressions were calculated in order to assess the education demand for various occupational categories and measure what effect the characteristics of an undertaking have on this. The variables selected in each equation are those which have the highest "explanatory power" amongst a list of seven variables: total assets, size, modernity, type, main activity, status and age. The results are particularly interesting (see summary in Table 23).

Three variables "explain" 28 per cent of the variance in the levels of education required for management. Depending on the size (measured in terms of the number of employees or total assets) and depending on the type (single undertaking, branch or parent company), the dispersion around the mean is very high: 7.5/10, which makes this result even more remarkable. In view of the wide variety of undertakings surveyed, this dispersion can obviously be explained by the "level" of the executive himself; e.g., the manager of a "nationalised undertaking" cannot be compared with his counterpart in a family textile business with 50 employees, nor the manager of a parent company with the manager of a branch.

At the other end of the scale—the skilled operatives—for the same reasons, the educational level required shows a wide dispersion around the mean (5.14/7.54); 27 per cent of the variance can be explained simply by the size (total assets) and the type of undertaking. The status also helps to explain this variance, but only to a very limited extent.

Secretaries have, to some extent by virtue of their function, a more "standardised" level of education; as a result, the characteristics of the undertaking contribute to explaining the variance to a lesser degree (22 per cent). Amongst the four occupations studied, production supervisors constitute the

TABLE 23. The characteristics of the demand function.

Occupation	Profiles required	Main criteria	Supplementary criteria	Regression for the educational level required in 1977			
Executives, Senior executives	Identification Initiative Efficiency	Extended education Experience	Age Health Sex	$\bar{x} = 10.0$	$\sigma = 7.5$	$R^2 = 0.278$	
				$\beta = 0.43$	$t = 2.52$	$R^2 = 0.107$	
				$\beta = 0.21$	$t = 0.37$	$R^2 = 0.036$	
				$\beta = 0.33$	$t = 0.29$	$R^2 = 0.097$	
						Constant = 5.275	
Key positions, Supervisors	Identification Initiative Efficiency Punctuality	Average education Experience Length of service	Sex Supervisor's assessment Age	$\bar{x} = 9.93$	$\sigma = 4.55$	$R^2 = 0.168$	
				$\beta = 0.08$	$t = 0.62$	$R^2 = 0.007$	
				$\beta = 0.42$	$t = 3.15$	$R^2 = 0.158$	
				$\beta = 0.14$	$t = 1.13$	$R^2 = 0.023$	
						Constant = 13.733	
Accountants, Secretaries	Efficiency Integrity Personal appearance	Experience Average education Supervisor's assessment	Sex Age Police record	$\bar{x} = 8.42$	$\sigma = 5.57$	$R^2 = 0.217$	
				$\beta = 0.32$	$t = 2.45$	$R^2 = 0.102$	
				$\beta = 0.15$	$t = 1.26$	$R^2 = 0.029$	
				$\beta = 0.20$	$t = 1.60$	$R^2 = 0.046$	
						Constant = 90.693	
Qualified and non- qualified workers	Punctuality Discipline Good nature	Supervisor's assessment Health Sex Experience	Age Minimal and average education	$\bar{x} = 7.54$	$\sigma = 5.14$	$R^2 = 2.660$	
				$\beta = 0.58$	$t = 4.27$	$R^2 = 0.256$	
				$\beta = 0.36$	$t = 2.67$	$R^2 = 0.119$	
				$\beta = 0.10$	$t = 0.83$	$R^2 = 0.013$	
						Constant = -3.941	

one where the required educational level is least related to the characteristics of the undertaking—legal form 2.4 per cent, modernity 0.7 per cent. On the other hand, their educational level is relatively closely linked with the sector of activity: 15.8 per cent of the explained variance. This result does much to corroborate the foregoing observations on the policy for recruiting workers and the criteria used in applying it.

IV. The interaction between employers and employees: a study of job characteristics

Chapter II showed that undertakings differ widely in terms of their characteristics (branch and sector of activity, size, type, legal form, modernity, production system, etc.) and thus, as a result, in terms of their occupational structures. Chapter III showed that there are considerable differences between workers' educational levels, and outlined the demand function of employers for several of the main job categories within the occupational structures. Since the functioning of the world of work is never a one-way process, because different "actors" are involved—employers and employees—and since this is an integrated process, one would have liked to have been able to compare: the characteristics of the undertakings, the demand for labour, the supply of labour and job applicants' characteristics, taking into account the methods of adjustment and adaptation used over a period of time. A comparison of this kind would have required follow-up studies of workers over a long period in conjunction with studies of the "history" of the companies and their policies of manpower utilisation. Lacking both the time and the necessary resources, we were obliged to confine this survey just to employers; instead of the comparison envisaged, our intention is to try to assess its results by reviewing the characteristics of the occupations (and not those of job applicants or even employees).

In fact, these characteristics are the outcome of a process of interaction between supply and demand based on the relationship between these two factors within the labour market; they correspond as it were to the equilibrium which is created between the needs of employers and their ability to satisfy these in the case of each type of job (depending on the supply position); they thus reflect the individual factors and the rules and regulations which affect the labour supply as well as industry's policy with regard to manpower utilisation; and lastly, they provide an indication of the stratification of the labour market in Panama.

The main purpose of this chapter is to show that job characteristics, far from being uniform, are dependent to a considerable extent on the undertaking concerned. In other words, the terms "technical staff", "supervisor", "operative" or "accountant" do not mean the same thing for every under-

taking regardless of its size or whether it is a public, private or multinational firm; naturally, the individual characteristics of the employee—his background and professional career—are important in determining, for example, the method or level of his remuneration, but what we are attempting to show is that this importance varies from occupation to occupation and from undertaking to undertaking. In order to do this, we shall attempt to answer three questions: How are employees recruited? Who is recruited and why? And under what conditions?

A. How are employees recruited?

The labour market in Panama, even in Panama City, is not yet organised and structured along European or North American lines. There have of course been some attempts at setting up and developing labour exchanges, but the employment bureaux at Panama and San Miguelito, which are probably the two largest in the country, still handle far too few cases for them to be instrumental in matching the supply and demand for labour. What is more, their activity is mainly concerned with unskilled workers and, to a marginal extent, with middle-range positions such as secretaries.

In view of these shortcomings, and no doubt also to some extent because undertakings have not a great deal of faith in labour exchanges, employers tend to resort to a variety of methods: the largest and most modern undertakings use small ads in the press; those which are more highly structured and organised have their own list of persons looking for a job which they use when they are seeking to fill a post; family businesses recruit on the basis of "personal recommendation". All of them, however, use their "in-house supply" to a greater or lesser extent depending on the type of vacancy. Table 24 summarises the position in 1977 (at the time of the survey) for the occupations selected for study. The following points should be noted.

TABLE 24. Method used for recruiting personnel (distribution of undertakings by percentage).

	In-house supply	Personal recom- mendation	Ads	Labour exchanges	Training estab- lishments	Employers' files
Management	60	19	10			
Technical staff	46	31	8			15
Production supervisors	84	7	4	1		1
Other supervisors	43	29	29			
Accountants	45	24	12	7	4	3
Executive secretaries	17	50	17		8	8
Secretaries	32	21	22	8	5	9
Skilled operatives	31	26	18	3	2	15
Unskilled operatives	22	32	8	8	3	16

Firstly, the importance of the "in-house supply" in the case of certain job categories, e.g., 84 per cent for "production supervisors" and 60 per cent for management. If one takes into account the fact that a large number of undertakings stated that they recruited internally, even in the case of production workers (operatives) or for specialised categories (secretaries), one can conclude that this constituted the main source of supply at the time of the survey. This is explained, at least partly, by the economic situation and employment conditions in Panama in 1977: when the economy is relatively stagnant or in recession, employers avoid taking on extra staff and resort to "promotion" or "rotation" of existing personnel as a means of meeting their requirements. This is probably also due to the composition of the sample. Table 25 shows how the use made of this "internal supply" varies with the sector of activity and the occupation: (i) with the exception of "wholesale trade" and "financial establishments", where executive secretaries probably have special duties requiring discretion and reliability (which implies recruitment from within the organisation), in the other sectors such positions are filled solely by recruitment from outside; (ii) the position, "status", and no doubt the qualifications of an accountant would appear to differ depending on the undertakings making up the various sectors: in the case of the "food" and "clothing" industries and the "hotels-café-restaurants", where accountants are probably of an average standard, they are recruited from outside; on the other hand, in the large nationalised undertakings in the "electricity-water" sector and in insurance companies, the position of "accountant" is one which is attained only via internal promotion, once one has "proved one's worth" (the χ^2 test at 5 per cent and 10 per cent shows a strong correlation between "sectors of activity" and the percentage of internal recruitment for these three occupations).

Secondly, the importance of recruitment on the basis of "personal recommendation": except in the case of production supervisors, between 20 and 50 per cent of undertakings stated that they recruited on the basis of personal recommendation for all the occupations studied. Despite the size of Panama's urban area, the job market remains "informal" and "non-institutionalised"; when one adds together the percentage of respondents recruiting internally or on the basis of personal recommendation, one is struck by the fact that for every occupation at least one out of every two undertakings stated that they used one of these two methods. In this connection it is interesting to note that as one gets higher up the job hierarchy, less use is made of the labour market and more of personal recommendations or in-house sources; one initial conclusion is inescapable—access to key positions and "good jobs" is either restricted or closed. It should also be noted that personal recommendations are more likely to be used in a small family undertaking than in a large undertaking, in a limited company rather than in a transnational or public undertaking, and in a traditional rather than in a modern undertaking. The figures in Table 26 illustrate this pattern but also highlight several significant exceptions: (i) even transnationals are apt to resort to "personal recommen-

TABLE 25. Percentage of internal recruitment per sector.

	Food	Clothing	Electricity/ Water	Wholesale trade	Retail trade	Transport	H.C.R.	Financial establish- ments	Insurance	Health	Other services
Management	50	50	67	40	71	67	33	60	100	100	67
Technical staff	—	—	50	—	—	—	—	75	—	67	—
Production supervisors	75	100	67	73	86	67	80	100	—	100	100
Other supervisors	0	—	—	67	—	50	50	0	100	—	—
Accountants	17	11	75	56	60	0	33	67	100	100	40
Executive secretaries	0	—	0	100	—	—	0	100	—	—	0
Secretaries	20	0	33	23	0	50	50	0	33	67	12
Skilled operatives	20	0	67	36	60	60	25	25	0	33	40
Unskilled operatives	20	0	67	29	0	0	29	—	0	—	12
No. of respondents	8	9	4	16	8	6	10	5	4	3	12

dation", (ii) greater use is made of "personal recommendation" by "modern" than traditional undertakings in recruiting technical staff (other than management), (iii) in the case of supervisors no clear pattern is apparent.

Thirdly, and conversely, recruitment via "ads" and via the "labour exchanges", i.e. the institutional and official methods, is of relatively minor importance: never more than 30 per cent of undertakings use these methods. In this context one should note the important difference between "production supervisors" and "other supervisors" as well as that between "executive secretaries" and "secretaries". This confirms the observations made earlier, i.e. the labour market is not the source used to fill "key positions".

TABLE 26. Percentage of recruitment on personal recommendation.

	Public	Limited company	Trans-national	Modern	Traditional	Less than 100 employees	More than 200 employees
Management	18	73	9	18	64	64	9
Technical staff	25	50	25	50	25	75	0
Production supervisors	60	40	0	40	40	40	40
Other supervisors	25	75	0	25	25	25	50
Accountants	6	75	12	19	56	50	19
Executive secretaries	0	83	17	20	83	83	17
Secretaries	15	61	7	23	54	46	15
Skilled operatives	12	62	12	25	50	56	12
Unskilled operatives	8	67	17	25	58	73	8
Number of respondents	12	71	12	32	33	56	19

Fourthly, training establishments are negligible as a source of recruitment; it is significant however that they are mentioned in the case of accountants and secretaries, which is evidence of the special relationships existing between certain undertakings and certain training establishments; it is also remarkable that vocational centres are so little used as a source of skilled or unskilled operatives. This fact should provide those responsible for vocational training in Panama with food for thought.

Lastly, it is worth noting the importance of the company's own files—the "firm's own employment service". This is partly the outcome of the unemployment and under-employment in Panama: local companies can afford the luxury of having their own job applicant files—it is a "buyer's market"; it is also due, as we have seen above, to the defects of the official system, i.e. the ineffectiveness of the labour exchanges. However, as would appear from the limited data we have available, it is probable that most companies (whatever their characteristics) have their own employment files.

The overall conclusions which result from this study of the recruitment methods used by employers are as follows. The labour market is not yet

structured for a good number of undertakings in Panama which rely to a large extent on personal recommendation. The critical situation on the labour market in 1977 exaggerates still further the contrasts between the external, organised facilities for recruitment, e.g. advertisements, training establishments, labour exchanges—and the rest. The adjustments made between the supply and demand for labour, which are discernible via the methods of recruitment, appear to be “harder” for workers at the lower end of the scale since, except in the case of “technical staff”, the number of undertakings using their own job applicant files increases as one goes down the scale. The same occupations, e.g. secretaries, accountants, whose “position” will vary depending on the company and its sector of activity, will be treated differently; individual characteristics do not of course appear explicitly in the figures and it is scarcely possible as yet to measure their importance, but an undertaking’s characteristics play a crucial part in deciding what methods will be used to fill such posts.

B. Who is recruited and for what job?

We can supply some of the answers to this question with the help of the data available on the breakdown by age, sex and level of education for the various job categories.

1. Sex breakdown

Of the total number of employees in the occupations selected, all undertakings combined, 38.6 per cent are women—1,980 out of a total of 5,124 (Table 27). It will however be noted that:

— Certain occupations have a higher proportion of women than others, e.g. secretaries, for socio-cultural reasons;

— As one goes higher up the job hierarchy, the percentage of women tends to diminish, e.g. 21.43 per cent for operatives; 19.25 per cent for supervisors (although it should be noted here that women have access to supervisory posts only when the majority of the operatives they will be supervising are themselves women); and about 12 per cent for senior executives. The coefficient of differential selection, i.e. the ratio of the proportion of women in an occupation to the proportion of women in the total number of employees, varies from 271.0 per cent for secretaries to 11.1 per cent for the traditionally male jobs, i.e. technical staff.

— Discrimination against women (at the management and technical staff level) would appear to be less pronounced in the “retail trade”, “transport”, “hotels-cafes-restaurants” and “repairs” than in other sectors of activity.

— The sectors of “textiles”, “H.C.R.”, “financial establishments”, “health” and “laundries” employ on average more women than the other sectors. The reasons for this are both economic (salary levels), sociological (belief in women’s aptitude for certain tasks) and cultural (particularly in the service sector).

TABLE 27. Percentage of women by sector.

Sector	Management	Technical staff	Production supervisors	Other supervisors	Accountants	Executive secretaries	Secretaries	Skilled operatives	Unskilled operatives	All occupations
Food	16.7		0	0	68.4	100.0	100.0	40.8	33.3	33.9
Clothing	0		72.4		78.9		100.0	97.2	100.0	93.9
Electricity/water	0	0	0		9.0		100.0	0	0	8.9
Wholesale trade	17.6		21.1	0	66.1	100.0	95.1	29.1	31.3	40.5
Retail trade	42.9		34.4		66.7	100.0	100.0	35.8	21.4	34.8
Transport	33.3		16.7	0	25.0		100.0	0	11.4	13.5
H.C.R.	33.3		27.8	16.7	80.0	100.0	100.0	29.7	70.5	52.3
Banking	8.7	23.0	0	100.0	8.3	100.0	100.0	23.3		49.2
Insurance	0	0		60.0	83.3		100.0	16.3	0	23.5
Health	0	33.3	100.0		50.0		100.0	61.1		61.4
Repairs	33.3		0		42.9	100.0	100.0	0	0	10.4
Laundries	0		50.0		100.0		100.0	41.2	100.0	71.9
Other services	0	0	11.1		0	100.0	100.0	55.0	9.1	27.6
Coefficient ¹	34.2	31.5	52.3	67.5	97.8	271.0	264.8	117.3	56.4	100.0
Total all sectors	12.7	11.6	19.3	25.0	36.1	100.0	99.5	43.3	20.8	36.9
Number of employees	102	199	228	20	296	34	414	2 421	1 410	5 124

¹ Coefficient of differential selection: percentage in job category/percentage all categories.

2. *Breakdown by age*

Since these figures are only approximate, comment on the modal age per occupation and per sector is confined primarily to two broad trends.

(a) For the most part jobs at the lower end of the scale are filled by those in the younger age-groups, either because seniority is a prerequisite for higher posts, e.g. supervisors, management, or because the age pyramid for the labour force in Panama is not sufficiently dynamic to permit both an increase in the numbers of those at the top of the hierarchy and their replacement by those in the younger age brackets. It would not perhaps be an unwarranted assumption to say that the younger generation's prospects in terms of job mobility appear fairly slim. What is more, this parallel between age hierarchy and job hierarchy is due no doubt to the fact that the "good jobs" are stable jobs on account of the fact that workers have no wish to give them up and employers no wish to incur the expense of recruiting a replacement—in line with the neo-classic theory of the labour market. In other words, the "best jobs", filled by the older age-groups, would be the most stable.

(b) Significant differences are apparent between sectors, reflecting differences in policies applied. As an example, take the case of production supervisors, accountants and secretaries:

— in the clothing industry: nine undertakings of which eight are limited companies, of medium size with about 150 employees, all private or individually-owned companies with on average some thirteen years of existence: the modal age for these three occupations is from 25 to 39;

— in the electricity/water sector: four undertakings, two small (less than 100 employees) and two very large (1,200-1,300 employees), three of which are public undertakings, all of them with more than fifteen years of existence: the modal age is 40-49 for supervisors, 25-39 for secretaries; in the case of accountants there are two modes, 40-49 and 25-29;

— in the retail trade sector: eight undertakings, all limited companies, of medium size with about 70 employees, including three parent companies and four branches, all with some twenty years of existence: the modal age is 40-49 in the case of supervisors, 25-39 for accountants, and less than 25 for secretaries.

If there is a conclusion to be drawn from these examples, this would certainly be the complexity of the link between the modal age for the occupations and the characteristics of the undertakings. This modal age is obviously a product of the age of the company, of the personnel policy in force (hiring and firing, rotation) and of the different status given to the same function in different organisations (e.g., the position of an office worker-secretary in a bank or insurance company is likely to be more standardised and well-defined than a similar post in industry—which can result in a more regular pyramid comprising all the age-groups, and one more clear-cut than in the case of the other sectors).

TABLE 28. Modal educational level by occupation and sector¹

	Management	Technical staff	Production supervisors	Other supervisors	Accountants	Executive secretaries	Secretaries	Skilled operatives	Unskilled operatives
Food	X	—	6/8	6	6	8/9	6	2	2
Clothing	X	—	8	—	9	—	6/8	8	6
Electricity and Water	2	X	8	—	8	—	8	2	2
Wholesale trade	X	—	2	9	9	2	9	6	2/3
Retail trade	9	—	4	—	9	4	2	2/4	—
Transport	9	—	9	2	9	—	2	8	2/3
H.C.R.	X	—	2	4	9	2	—	2	2
Financial establishments	X	9	9	—	—	—	6/8	6	—
Insurance	X	X	—	—	—	—	2	2	4
Health	X	X	—	—	—	—	—	4	—
Other services	2	X	—	—	—	2	—	—	2

1. 1 = incomplete primary, 2 = complete primary, 3 = incomplete secondary, 4 = complete secondary, 5 = incomplete *Bachillerato*, 6 = complete *Bachillerato*, 7 = incomplete vocational and technical, 8 = complete vocational and technical, 9 = incomplete university, X = complete university.
2. Distribution too dispersed.

3. Breakdown by educational level

Data concerning the educational level for the various job categories have already been given in the first section of the preceding chapter. Here we shall do no more than mention some of the more salient points summarised in Table 28:

— the hierarchy of jobs matches the classification of workers on the basis of their educational level. As a general rule, the modal educational level (in terms of number of years' schooling) is lower amongst the operative categories and higher at management level;

— there are marked differences between sectors of activity. In certain sectors and for the same occupations the distribution of the educational level is so dispersed that the only possible conclusion is that there is no relationship between educational level and job category, e.g. in the case of production supervisors, the modal educational level ranges from primary school to university. The distribution for the modal and mean educational level for the sample is shown in Table 29.

TABLE 29. Percentage distribution of modal and mean educational levels

Modal educational level		Mean educational level	
Code			
1 Incomplete primary	10.6	6 years	5.9
2 Complete primary	7.1	6-8	11.6
3 Incomplete secondary	7.1	9-10-11	20.0
4 Complete secondary	14.1	12-14	28.3
5 Incomplete <i>Bachillerato</i>	1.2	15	14.1
6 Complete <i>Bachillerato</i>	9.4	16-17	10.6
7 Incomplete voc. and tech.	3.5	10	3.4
8 Complete voc. and tech.	17.6		
9-X University	16.5		
No reply	12.9	No reply	12.9

Based on the figures in this Table, the only possible conclusions are that (i) individual characteristics (education) do not determine the job category and (ii) the importance attached to the occupation of "production supervisor" depends to a very large extent on the undertaking concerned: is there much in common between the supervisor with 16-17 years of education (10.6 per cent of the sample) and the one with 6 years of education (5.9 per cent of the sample)?

C. Working conditions

Any attempt at understanding the interaction between employers and employees must necessarily include some attempt at providing information on conditions of hire and conditions of work since, among other things, these

conditions are evidence of the relative strength of each partner in the world of work, e.g. workers' bargaining power, legal and statutory protection, the relative scarcity of the various occupations, etc. In the context of this survey we confined our attention to gathering some information on methods of remuneration, working hours, the extent to which labour was unionised and wage differentials (see figures in Table 30).

TABLE 30. Job characteristics—average figures.

Categories	Percentage of undertakings using system of:		Average number of hours worked	Percentage of undertakings where entire occupational category is:	
	fixed wage	pay scale		unionised	non-unionised
Management	65	7	42.3	3	95
Technical staff	46	23	40.0	8	92
Production supervisors	66	12	42.6	31	66
Other supervisors	79	21	43.0	7	93
Accountants	79	10	42.0	24	72
Executive secretaries	67	10	40.5	17	83
Secretaries	76	13	41.8	30	70
Skilled operatives	47	15	42.7	52	40
Unskilled operatives	78	8	44.8	59	41

1. Method of remuneration

There are five possible methods of remuneration: piece wage, fixed wage, periodic reviews, with commission, or on the basis of a pay-scale.

The piece wage concerns only operatives and, to some extent, supervisors—however, few undertakings use this system. The commission wage applies mainly to employees in the hotels-café-restaurants and trade sectors—the fact that these employees are classified as “skilled operatives” in the sectors concerned explains why 21 per cent of the undertakings are recorded as paying their “skilled operatives” on a commission basis. In fact, a fixed wage would seem to be the general rule in Panama. Certain exceptions to this however, e.g. remuneration based on performance reviews or on a pay-scale, are good illustrations of labour's bargaining power, the policy and characteristics of an undertaking and the regulations in force.

It would appear that: (a) technical staff, executive secretaries and management (if one includes remuneration on a commission basis) are paid on the basis of performance in 25-31 per cent of the undertakings surveyed; this figure is larger in the case of other supervisors, accountants and secretaries—the lowest figure being for unskilled operatives (8 per cent); and (b) remuneration in accordance with a pay-scale, which is to the workers' advantage, applies mainly to technical staff, supervisors (other than production

supervisors), then to skilled operatives and secretaries, followed by executive secretaries and accountants, and then lastly to management and unskilled operatives.

In the case of technical staff, these figure tie in with their ranking in the job hierarchy. In the case of supervisors, other than production supervisors, the fact that 21 per cent of firms apply the system of a pay-scale is also understandable, since the only other method of remuneration in use is the fixed wage (79 per cent)—they are therefore on a comparable footing to their counterparts in production. The position of skilled operatives is due partly to the fact that they are members of unions (i.e. organised)—52 per cent of them, partly to the fact that they are employed in the public sector (electricity, water) and partly because some are in fact "white-collar" workers (trade and transport). Secretaries have a less favourable status than one would imagine: whereas 13 per cent of the undertakings stated that their earnings were based on a pay-scale, 76 per cent said they paid them a fixed wage. The same is true for accountants. The small percentage of management paid in accordance with a salary scale is due to the structure of companies in Panama and no doubt also to the nature of their job; their salaries are reviewed periodically: 14 per cent of the undertakings stated that they used a "review system", as against 7 per cent applying a salary scale.

Unskilled operatives, at the lower end of the scale, obviously get the least favourable treatment: only 8 per cent of the undertakings said that they applied a wage scale, as against 83 per cent paying on a piece-rate or fixed-wage basis.

Despite the limited number of observations, a test (χ^2) of the relationship between method of remuneration and sector of activity shows a significant correlation (at 5 per cent) in the case of production supervisors and skilled operatives and (at 10 per cent) for other supervisors and for accountants. This result confirms once again the fact that job categories have different meanings, depending on the nature of a company's activities.

2. *Working hours*

Whereas the method of remuneration provides some indication of the "conditions of hire", the number of hours worked gives some idea of the arduousness involved and the constraints imposed on the individual by his working conditions.

Here again, the data confirm the hypothesis that, for the same job category, working conditions will vary considerably depending on the nature of the undertaking and the nature of its activity. It will be seen that: (a) the public sector (electricity, water) has a standard working week of 40 hours, irrespective of the job category. Almost the same is true for "health"—another "public" sector. In the case of the "retail trade", "transport", "H.C.R.", "laundries"—sectors largely composed of small, privately-owned undertakings, the number of hours worked will be high, although it will vary somewhat from one category to another; (b) if one analyses the figures for certain

specific occupations, it will be seen, for example, that a manager's working week will vary from 37 to 48 hours, which to some extent provides a clue as to the sector in which he works. The same is true for supervisors and operatives. The number of hours worked by accountants, secretaries and executive secretaries, whose job functions are more standardised, will vary considerably less from one sector to another. Lastly, it will be seen that skilled operatives have the longest working hours.

3. The degree of unionisation

This constitutes the third factor in assessing the conditions affecting the adjustment of the interests of employers and employees. The pattern of unionisation in fact closely follows the hierarchy of occupations: firstly, the level of union membership is high amongst operatives—in 52-59 per cent of undertakings; they are followed by the "white-collar" workers (secretaries, accountants) and production supervisors—unionised in 24-38 per cent of undertakings; and lastly by technical staff (8 per cent) and management (3 per cent). Two interesting exceptions are worth noting: other supervisors (without any doubt, by reason of the undertakings to which they belong—see below) and executive secretaries (whose position is an ambiguous one since their status within an organisation links them with management, whilst their conditions of employment link them with the workers) are rarely unionised.

In addition, a fairly strong concentration is apparent at the two extremes in any company: employees with the same occupation will tend to be either all union members or, on the contrary, all non-unionised. This is clear evidence of the influence of the company in determining the degree of unionisation (organisation) of its workers. Despite the limited number of observations, the χ^2 test shows that there is in fact a significant correlation (at 5 and 10 per cent) between the attitude of management and the "status" of the undertaking (1 per cent), that of executive secretaries with the "status" of the undertaking (5.4 per cent), that of secretaries with the sector of activity (4.6 per cent) and with the "status" (9.6 per cent), and that of technical staff with the sector of activity (7.9 per cent) and with the "status" (7 per cent).

Basically, therefore, the likelihood of a worker being a union member will be far greater if he belongs to a job category towards the lower end of the scale and if he works in a company where the other workers are members of a union. This brings us to the question: what companies have been the least or most successful in resisting unionisation, bearing in mind regulations in force in Panama?

The breakdown by sector (three have been selected as examples) demonstrates a certain correlation between "occupation" and "sector". In the case of operatives, production supervisors and accountants, it would seem that manufacturing industry has been the least successful in resisting unionisation. In the case of other occupations, it is sometimes the trade sector and sometimes the services which have resisted most successfully.

The breakdown by status shows that the "transnationals" have been unquestionably the most successful in resisting unionisation, followed closely by the public sector. Amongst the limited companies, there is a fairly high degree of unionisation.

The breakdown by size shows that medium-size undertakings (100-200 employees) have been less successful than small undertakings (less than 50 employees) in resisting unionisation in the case of supervisors, executive secretaries, and skilled operatives. For the other occupations, the position is either comparable or the figures are reversed.

Basically, therefore, with the exception of "status", there is no clear trend; unionisation is obviously a problem which is specific to each occupation and to each undertaking.

4. *Pay differentials*

To complete the picture of the different ways of adjusting employers' and employees' interests in the case of each occupation, some interesting information can be derived from the data on the *lowest-paid category of workers* in each organisation and the relationship between their wage level and those for other occupations.

(a). It is not without significance that the lowest-paid category is not the same for every undertaking. This is no doubt due to the nature of the jobs themselves, which can vary in terms of the duties, difficulty and responsibility involved. It also depends on the organisational structure and reflects the different status of an occupation from one undertaking to another.

In certain undertakings (18 out of 72) secretaries are the ones at the bottom of the scale—either because the company has no operatives or, as is more often the case, these operatives, being more numerous, are better able to protect their wage-level. In 26 out of 72 undertakings, the lowest-paid category is the skilled operatives and not the unskilled operatives—certain undertakings no doubt do not have any unskilled operatives or only a very small number¹, which would explain the position of skilled workers at the bottom of the pay ladder, but most firms employ both categories of worker. There can be no doubt therefore² that in the case of a good number of firms the distinction between skilled and unskilled operatives is less clear-cut than one might suppose—they form a single category ("blue-collar" or "white-collar" workers) with varying degrees of experience. Moreover, one has to keep in mind the definition used to distinguish between the categories of skilled and unskilled workers, namely that an unskilled operative is a worker performing a simple task, and a skilled operative is a worker performing a complex

1. They were therefore omitted from the occupations selected.

2. Ignoring for the moment errors in understanding the question on the part of respondents and errors due to the systematic bias which affects answers to any question on wages and salaries.

task—which is perfectly consistent with the fact that the lowest-paid job category is one or the other.

None the less, it would appear that the lowest-paid occupation is either the secretaries, the “blue-collar” workers or the “white-collar” workers at the bottom end of the scale. In analysing the ratios of wage and salary levels in relation to the lowest-paid category of workers, one must bear in mind the fact that this lowest-paid occupation is not the same in every case.

(b). For the sake of comparison we have taken the standard wage for each occupation and expressed this as a percentage of the reference wage. Deviations from the reference wage constitute a direct measure of pay differentials within an organisation and provide important information both on the job hierarchy and the manner of adjusting supply and demand for the various occupations. Table 31 gives the statistical distribution for each occupation.

TABLE 31. Distribution of the ratio *v.* reference wage.

	N	Upper quartile	Median	Lower quartile	Mean	σ
		%	%	%	%	%
Management	57	290	470	595	478	252
Technical staff	13	245	265	400	330	154
Production supervisors	74	160	225	335	271	179
Other supervisors	14	160	260	290	284	154
Accountants	67	140	195	270	223	123
Executive secretaries	12	180	200	250	230	87
Secretaries	63	100	115	175	140	55
Skilled operatives	61	100	125	185	164	102
Unskilled operatives	37	100	100	100	113	57

It will be noticed that “secretaries” are certainly on a par with skilled and unskilled operatives at the “tail-end of the queue” in terms of pay. It will also be seen that executive secretaries are in an ambiguous position half-way between management/technical staff and the “blue-collar” workers. Another feature worth noting is the very wide dispersion of salary ratios for every occupation, although this is more marked in the case of higher incomes—the reason for this is that these are “ratios” which are not calculated on the same reference wage plus the fact that they are based on a limited number of observations. The wide dispersion around the mean for the ratio *v.* the reference wage is a further indication that each occupation has a different significance from one company to another, and it would seem that this is particularly true in the case of production supervisors, who have the highest coefficient of variation (σ/m), 66 per cent. For this reason we shall now go on to analyse how these ratios for production supervisors vary by sector and in relation to the average number of hours worked.

(c). Table 32 shows the distribution of the undertakings in relation to two factors: average number of hours worked and ratio v. reference wage. Contrary to what one might expect, the ratio of the supervisor's wage to an operative's wage does not increase in relation to the number of hours the supervisor works. If one may be allowed to hazard a conclusion on the basis of these data, this would be that the dispersion of the wage ratio is due more to the nature of a job and the profile of the company than to the working conditions in terms of hours worked.

TABLE 32. Production supervisors: ratio v. reference wage and number of hours worked

	100% or less	100-200%	201-300%	More than 300%
40 hours or less	2	5	3	9
41-47 hours	3	8	8	10
48 hours or more	3	10	9	3

(d). Table 33 gives the distribution of the wage ratio supervisors v. operatives (skilled or unskilled) per sector of activity. Despite the limited number of observations, the differences between sectors are very marked; from this it can be inferred, by somewhat overstepping the bounds of strict statistical analysis, that the specific working conditions which give the supervisor's position a different character in each sector, together with the variations in the relative value attached to qualifications or job functions, provide an initial explanation of the apparent disparity in pay scales. The same occupation has quite different meanings for different undertakings, which tends to give it a

TABLE 33. Production supervisors: ratio v. reference wage per sector.

	100% or less	100-200%	200-300%	More than 300%
Food	0	2	3	3
Clothing	5	1	2	0
Electricity, water	0	0	1	3
Wholesale trade	0	3	5	7
Retail trade	0	3	1	3
Transport	0	3	1	0
H.C.R.	0	4	6	0
Financial establishments	0	2	1	1
Insurance	0	1	1	0
Health	0	1	1	1
Repairs	0	1	1	2
Laundries	1	1	1	0

different status in the hierarchy¹ as evidenced by the level of pay in relation to the reference wage. With regard to the disparity between wage rates for operatives and supervisors, the question obviously still has to be answered as to how much of this is due to (i) their different "roles" and functions, i.e. the organisational relationship, (ii) the tasks they have to perform, i.e. the technical aspect and (iii) the relative "scarcity" of the supply on the labour market. We can in fact leave this last dimension out of our first approximation provided we do not attempt to explain or interpret the variations in the ratio for all undertakings combined, namely in "absolute terms", but confine this to undertakings of a similar nature, namely in relative terms. It is obviously difficult to separate the first two dimensions, organisational and technical. One could get some rough indications by comparing ratios for undertakings of a similar character and undertakings of a dissimilar character within the same sector of activity: however, this type of analysis would require "monographs" on individual undertakings and unfortunately the data available are not sufficient for this.

On the other hand, with the data we do have it is possible to analyse the factors affecting the dispersion of these ratios, i.e. the characteristics of an undertaking, working conditions and the characteristics of the individual. This will form the subject of the last section in this chapter.

D. The twin effects of supply and demand on pay differentials: hierarchy and segmentation

We have been able to supply some of the answers to the questions how does one recruit, whom does one recruit, for what job categories and under what conditions? These partial answers can be grouped around two fundamental notions: (a) the hierarchy of occupations, without a doubt, depends on the characteristics of the individual and the nature of the tasks performed, but it is also conditioned to a large extent by the methods of access which in turn are linked to the structures of the undertaking; and (b) this hierarchy, which is the outcome of the interaction between employers and employees, appears as an essential factor in the segmentation (or stratification) of the labour market.

The theories on segmentation of course make use of other notions and other factors¹—in particular a historical review of the dialectical and structural relationships between owners of capital and owners of labour—which are outside the scope of this survey; moreover, it is of course not possible within the context of this survey to test all the elements in this theory—in particular, the creation of barriers between occupations which hamper mobility between

1. The "foreman" is sometimes put on a par with the "production manager".

1. Cf. M. Carnoy, "Segmented labour markets: a review of the theoretical and empirical literature and its implications for educational planning", in Volume II of this publication, pp. 9-122.

the different strata in a segmented labour market; none the less, in the case of the ten occupations studied under the headings of (i) key occupations (ii) management, (iii) operatives and (iv) employees (secretaries, accountants), we have been able to demonstrate:

(a) the considerable differences in recruitment criteria both from the point of view of the weight given to ascriptive and cognitive criteria as well as from that of the attitudes and aptitudes associated with, and required for, each occupation;

(b) the close parallel between level of education and the ranking of occupations within a hierarchy;

(c) the differences between the characteristics of workers in different occupations, and in conditions of recruitment and work;

(d) the disparities in pay scales, measured in terms of the ratio *v.* the lowest paid occupation and the parallel between the pattern for these ratios and the job hierarchy.

What has still to be determined with regard to these pay differentials is the extent to which they are due to the undertakings themselves, the characteristics of the workers and the conditions of work, so as to be able to interpret the nature of the interactions between employers and employees and the method of adjusting the supply and demand for labour.

For this purpose we have chosen three particularly sensitive occupations: "skilled operatives"—generally constituting the lowest-paid category; production supervisors—directly linked in the chain of authority with the operatives; and management—in a position of authority *vis-à-vis* every worker. Two series of regression analyses were made: the first concerned "pay" and covered all the undertakings for which data were available. It should be remembered that the question concerning pay scales was deliberately left as an optional one so as to ensure a level of satisfactory replies—which reduced the response rate by half. The second covered pay ratios. In order to avoid errors due to the lack of comparability between ratios, the regression analysis covered only undertakings in which the lowest-paid category was the skilled operative.

In all, five regressions were run (three on pay and two on the ratios) taking into account three sets of variables: the *characteristics of individuals* as expressed by two variables i.e. the number of years' schooling and the number of months of professional training; the *working conditions* measured in terms of the average number of hours worked per week; and the *characteristics of the undertakings* measured in terms of a "technical" indicator, i.e. size, and an "organisational" indicator, i.e. type.

The results of these regressions, which are shown in Tables 34 and 35, call for several comments.¹

Firstly, it is possible to explain a significant portion of the variance in the pay ratios through five variables—despite the limited number of observations

1. Although, from a statistical point of view, these results are not significant.

TABLE 34. Regression analysis on pay ratios by occupation.

	Management	Supervisors
N (number of observations)	20	27
\bar{y}	49.2	29.7
σ_y	22.6	17.5
Constant	64.5	4.9
R^2	0.806	0.743
\bar{R}^2	0.725	0.686

	β	t	Mv	β	t	Mv
Education	0.289	1.54	0.059	0.111	0.63	0.008
Vocational training	0.169	1.03	0.027	0.125	0.84	0.014
Working hours	-0.251	1.41	0.050	—	—	—
Size	0.416	2.36	0.139	0.668	4.00	0.325
Type	-0.268	1.63	0.066	-0.047	0.32	0.002

\bar{R}^2 = multiple correlation adjusted to take account of the small size of the sample.
Mv = marginal variance explained.

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Skilled operatives

Mv = marginal variance explained.

($N = 27-39$ for pay levels and $20-27$ for the ratios), the very wide dispersion of the variable analysed (as evidenced by the relations σ/\bar{s} and σ/\bar{y}) and the approximate nature of the data on wages and salaries.

Secondly, a glance at the regressions on pay shows that (i) the significance of the characteristics of the individual in determining pay levels varies considerably depending on the occupations—16 per cent in the case of management, 11.7 per cent in the case of supervisors, and 4.4 per cent in the case of operatives; (ii) the influence of the undertaking's characteristics seems on the contrary to be stronger in the case of jobs at the lower end of the scale—16.8 per cent for operatives as against 2.7 per cent for supervisors and 7.8 per cent for management; (iii) the explanatory power of the number of hours worked is nil in the case of supervisors, low in the case of operatives (1 per cent), but accounts for 6 per cent of the salary dispersion in the case of management.

Thirdly, a glance at the regressions on pay ratios shows that (i) the variations in pay between management and operatives can be explained 20 per cent by the undertaking's characteristics, 5 per cent by working conditions and 8 per cent by the characteristics of the individual, and (ii) the variation in pay between supervisors and operatives is explained almost entirely by the characteristics of the undertaking—some 33 per cent, as against 2 per cent for the characteristics of the individual.

Thus the supply/demand adjustments cut significantly across the job hierarchy and contribute directly to the stratification of the labour market: the jobs at the lower end of the scale depend little on the characteristics of the individual and are linked to the characteristics of the undertaking; even vocational training has only a marginal explanatory power; the amount of schooling provides an explanation for only 4.4 per cent. The pay of supervisors, who constitute an ambiguous category between management and operatives, is determined primarily by the characteristics of the individual. Jobs at the top end of the scale depend both on the undertaking and the characteristics of the individual. The value of the pay ratios regressions is that they provide an additional explanatory model: the reference wage (operatives) depends mainly on the characteristics of the undertaking. Once this reference wage has been fixed the reference wage/supervisors' wage dispersions are primarily linked to the policy of the undertaking (pay scales); and the reference wage/management wage dispersions also bring into play the characteristics of the individual.

Therefore if one may be permitted to draw a conclusion from these very approximate results, the occupations, by reason of their level of remuneration and the factors which affect this, clearly belong to different worlds and are governed by different rules. Some as it were take no account of the worker—of his level of education and professional training, nor of working conditions—this is true for the operative categories. Others tend to involve the worker and the undertaking: the salary of a supervisor is of course related to the characteristics of the individual but the ratios v. the reference wage are attributable for about 3.5 per cent to the undertaking. The remainder attribute

a by no means negligible proportion of the wage differential to the characteristics of the individual, thereby rewarding “diplomas”.

From the point of view of educational planning, it is particularly interesting to note (i) that the level of education is recognised in terms of pay level to a far greater extent for jobs at the top end of the scale than it is for jobs at the lower end, and (ii) that, strangely enough, vocational training accounts for only a very small fraction of the dispersion in pay levels.

These results obviously have a certain number of implications, and we shall examine them in the concluding chapter.

V. Conclusions

The scope of this report is confined to a small sample of undertakings representing several sectors of activity in Panama City; it leaves out the important sectors of public administration and agriculture. It only covers employers and does not include workers or educational establishments. And lastly, the survey is half-way between a monograph study of an undertaking, concentrating on the relationship between the company's characteristics and its labour policy, and a classic statistical survey. The findings need therefore to be interpreted with care—although they do not have the highly detailed, "literary" character inevitable in any monographic treatment, they cannot on the other hand claim a precision or a general validity based on the statistical "Law of numbers". Bearing this in mind, one can nevertheless draw the following conclusions.

Firstly, it is not possible to find standard models linking the characteristics of a company (organisational and technical) to the way in which qualifications are used or to the employment pattern. Certainly, we were able to show that the "main activity" of the undertaking was determinant in this respect; manpower planners have long since adopted the principle of drawing a distinction between branches or sectors of activities in their estimates; however, the variations within the same sector—which might at first sight appear to be homogeneous—are such (e.g. size, status, market, production technique, method of operation) and their impact on the method of manpower utilisation so important, that the "average figures" have really little significance—and more so in view of the fact that the level of significance for each aspect varies from one sector of activity to another. To take an example: when one analyses the ratio of "technicians" or "supervisors" in the different undertakings within the same sector, one is struck by the fact that two undertakings of a similar size, using the same production process, will have different ratios because one is multinational and the other national, or because one is a "branch" belonging to a group and the other a family undertaking, etc. It seems, therefore, that the method of human resource utilisation is certainly directly dependent on the branch or sector of production and the technical and social characteristics of the undertaking, which no doubt reflect its

pattern of work organisation. One can also conclude that one needs to be cautious about any attempt to generalise with respect to the relationship between method of human resource utilisation and sector of production. Consequently, if one assumes (and this is a very questionable assumption) that good planning of human resources would be that which "ties in" closest with the real needs of employers (assessed here *ex post* on patterns of use), in order genuinely to improve this planning, one would need to have much more detailed and precise information on changes in the structure of industry and the relationship between employment patterns and the typology of undertakings.

Secondly, although the data collected deal with undertakings and we have no "individual information" on workers, the information collected enables us to venture a certain number of conclusions in this area. In fact, the study of recruitment and promotion methods and personnel policy dealt mainly with carefully selected occupations with a specific position within the organisation and linked to one another hierarchically, thus covering the wide variety of situations found in the business world. The occupations selected comprised: the decision-makers—owners and management; the jobs at the top of the hierarchy but with no authority to take decisions—administrative and perhaps technical staff; the "ambiguous" jobs, either because specialised or outside the hierarchy—accountants, secretaries, or because linked by some of their characteristics to management and by others to workers—supervisors, executive secretaries; the jobs at the lower end of the scale (both white- and blue-collar) whom we have classified functionally as "skilled operatives" performing complex tasks and as "unskilled operatives" performing simple tasks and with the humblest position within the organisation.

What profiles of workers as defined by the individual's characteristics can one place alongside this range of occupations defined in relation to the undertaking? Is it reasonable to define these profiles either solely on the basis of cognitive data, i.e. skills, or solely on the basis of the level of education or vocational training? From the survey, the answer would appear to be no. Naturally, there was evidence of a certain degree of parallelism between the hierarchy of jobs and the hierarchy of educational profiles, but the situation is manifestly more complex:

- there is no clear correlation between degree of vocational training and job hierarchy;
- the same "amount" of education has not the same effect, depending on age and sex (some jobs being apparently by definition reserved for men or women in a given age-group). In other words, the "ascriptive" data constitute an explicit factor in eligibility for various occupations, for cultural, sociological or other reasons compatible with a company's strategy;
- the "ground rules" with regard to recruitment and promotion vary considerably from one occupation to another. Undoubtedly, high-level graduates are more likely to get the better jobs; furthermore, possibilities of, and criteria for, promotion vary significantly from one occupation to another, so

that the influence of education on a worker's career is a long-lasting one since its effect is not restricted solely to eligibility for one's first job. And finally, the study would seem to indicate that the position of education as a criterion for recruitment varies according to occupation: whereas for the high-level jobs, education and professional experience determine recruitment and promotion to a vital degree, for the jobs at the lower end of the scale other criteria are at least equally important—the ascriptive and non-cognitive ones; — the aptitudes and attitudes expected of workers also vary depending on the occupation, denoting as it were a hierarchy of qualities parallel with the job hierarchy. In broad terms, for the high-level jobs stress is laid on enterprise, initiative etc., whereas for jobs at the lower end of the scale the qualities required are discipline, routine, application.

All in all, it would appear that the correspondence between “occupations” and “workers” is particularly extensive if one is careful to take into account the organisational relationships within industry. In the case of workers this correspondence has three dimensions, i.e. ascriptive, cognitive and non-cognitive; in the case of companies it has several dimensions, e.g. sector, status, size, etc. Education is only one aspect—no doubt linked to several others, but clearly insufficient on its own to “qualify” or “define” the occupations. If these results were to be confirmed by other research, then what needs to be examined is the whole policy affecting (i) the structure of the educational system—and in particular the function of the common core instruction as well as that of technical and professional education, and (ii) the explicit or implicit content of curricula as well as teaching methods from the point of view of their repercussions on the attitudes and behaviour patterns instilled in students at the various educational levels.

Thirdly, the relationship between education and work cannot be reduced merely to a relationship between supply and demand for workers with various qualifications; it involves relationships of correspondence/conflict, independence/domination between two institutions within the social system. A few remarks will indicate our meaning.

Material prospects—in terms of earnings, status and working conditions—are certainly more favourable for those with a high level of education than for those with a low level. However, the level of education is not invariably linked with a person's material prospects. This linkage depends on the individual's characteristics: age, sex, social background. This linkage also depends on the characteristics of the undertaking. The analysis of the educational level for the different occupations shows that the statistical distributions of the educational profiles required by employers vary in relation to the sector of activity, the size of the undertaking, its status and its method of operation (as expressed by the coefficient of modernity).

This leads to the conclusion that job descriptions themselves (functions, status etc.) vary greatly from one company to another. And lastly, this linkage depends on the occupations concerned. In other words, once the proposition has been accepted that “more education = higher-level job = greater material

prospects", the pay differentials for jobs at the lower end of the scale appear to be less linked to the individual's characteristics (age, education) than to the characteristics of the undertaking—the reverse would appear to be true in the case of high-level jobs. What this means therefore is that the characteristics of an individual worker, irrespective of whether these specify his educational background, are not in themselves sufficient to explain the pay differentials between occupations; to do this one must also take into account the characteristics of undertakings, which have different policies with regard to pay, and which seem to attribute greater importance to the characteristics of the individual when deciding the pay of high-level workers than they do in the case of the lower echelons. This suggests that Panama's society is highly stratified and that the dualism of its economic system and its dependence on the outside world give rise to a socio-economic inequality in geographic terms and between socio-economic groups. In the sectors of activity covered by the survey, such disparities are considerable between different occupations, whether one analyses policies of recruitment (and promotion), pay policies (wage scales), or working conditions. These factors bear out the assumption of a segmented labour market and enable us to deduce how this process of segmentation was able to develop: a local and unstable labour market existing alongside a narrow market open to the outside world; development of the education system in conjunction with substantial disparities between the supply and demand for labour. Finally, this suggests that the relationships between education and work involve relationships between social institutions, which highlights the value of a structural approach. In terms of the parallel observed between job hierarchies and workers' educational level and in terms of employers' inflationary demand on educational qualifications as education becomes more widespread, education and the world of work can be said to have a relationship of correspondence.¹ In terms of the dispersion observed for the educational profiles of workers within the various job categories, in terms of the unemployment or under-employment of school-leavers in Panama and in terms of the different weight assigned to education in recruitment policies, education and the world of work can also be said to have a relationship of conflict.¹ The fact that the advantages drawn from education are not independent of the profile (the characteristics) of the educational institutions themselves suggests a relationship of domination of education by the world of work—for some categories of job, for instance, employers state that they prefer to recruit from particular educational establishments or ones with certain particular characteristics. However, the opposite would seem to be implied by the independent development of the educational system, which has caused employers to change their requirements. And lastly, the independent development of the "supply" can be interpreted as the sign of independence between these two social institutions. The dynamics of the relationship

1. Although to verify this, it would be necessary to go a stage further and analyse the educational system.

between education and work are complex and dialectical; to plan education without taking this fact into account is to court the danger that facts will contradict the theories. Thus, it is theoretically possible to develop an educational system which fits closely the requirements of industry, as soon as one possesses a thorough knowledge of this demand; but is not this procedure—which assumes total domination of education by the world of work—theoretically indefensible?¹ Because although there is “correspondence” between these social institutions there is also “conflict”; although there is “domination” it is not entirely in one direction, there is a degree of independence too. Thus planning the development of a modern labour force within a society demands knowledge not only of the requirements of the world of work, but also of its dialectical relationships with education and the probable trend for each over the planning period.

In particular, and coming back to our survey, it is not enough to explain (as we have attempted to do) the “demand” on the part of industry and the results of the interaction between employers and employees measured “*ex post*”. Nor is it sufficient to identify and explain the complexity of the relationship between education and the world of work and its effects, e.g. the stratification of Panamanian society. One needs to go further:

— Firstly, to assess how this relationship will evolve and in particular whether the process of stratification will continue to develop or will slowly disappear. In particular one might postulate that, with the inflation of diplomas, the erosion of education’s rate of return, the possible closing of the gap between the employment policies of modern and traditional undertakings and the consequent redistribution of job applicants between the different types of undertaking, the process of segmentation occupations will tend to disappear. On the other hand, if one assumes that these trends will affect only the high-level positions — or more generally speaking, the non-manual jobs² (since education is more important at the higher level)—one is obliged to accept the fact that the increasing standardisation which will affect such jobs will be accompanied by an increasing heterogeneity *vis-à-vis* the lower-level jobs, thus accentuating the process of segmentation.

— Secondly, one has to evaluate the changing structure of the world of work in Panama, since this determines industry’s “demand” in terms of “volume” and “quality”. Basically, the crucial problem is how Panama’s society and economy will develop in the future. Will its economic dependence persist or, on the contrary, will there be a progressive “Panamisation” of the country?

There is unfortunately no easy answer to this question, and it cannot be based on a Manichaeian vision of the country’s future. However, without

1. Is it legitimate whatever the characteristics of the world of work? See J. Hallak, *A qui profite l'école?*, Paris, PUF, 1974.

2. Cf. R. Clignet, *The Africanisation of the labor market*, Berkeley, University of California, 1976.

making some hypotheses as to this future, how can one gauge the evaluation of Panama's industrial structure, the effects of this evolution on the pattern of manpower utilisation and the consequences for educational policy, the ratio of management, technicians and supervisors, etc.? The demands of employers in "quantitative" terms and per occupation and the emphasis placed on specific characteristics for employees will vary depending on whether priority is given to large or small undertakings, depending on whether the "tertiary sector" retains its importance or declines in favour of the "secondary sector", depending on the public sector's importance in the industrial area, depending on the pace of modernisation of the production process and management methods. This is particularly true for the level of education of the work-force.

In this connection, it is well-known that the effects of formal education change over a period of time. The spread of education results in an increase in the number of better-educated job applicants. The growth in the supply of qualified labour changes the way in which the labour market functions. In particular, educated labour sees its chances of reaching the highest rungs on the employment ladder through education diminish and, despite its higher level of education, has to be content with jobs which are less well paid. Our survey of course only indirectly provides information for assessing the effects on demand of quantitative and qualitative changes in the supply. However, on the basis of other studies one can assume that the spread of primary and secondary education in Panama has resulted in a drop in the "social return" from primary and secondary education and in particular in the emergence of under-employment (even unemployment) amongst the educated labour force. No doubt, faced with this situation, the ruling classes and the authorities will be tempted to apply a system of restricted entry. But the decline of the individual return encourages families to leave their children at school even longer, so that they are more certain of achieving their ambitions in terms of income. The adoption of a system of restricted entry would therefore conflict with the attitude of parents; the authorities could consider ceasing to subsidise post-compulsory education, but the political cost of such a decision would be far from negligible since the attitude of the parents coincides with the wishes of the employers, who are anxious to have an abundant and cheap supply of skilled labour. Industry would therefore join forces with parents to insist that the subsidy for education be maintained. And lastly, the social cost of restricting numbers is far from negligible: the withdrawal of the subsidy could well result in quickening the pace of social stratification (between the privileged few who can afford to continue their education and those who cannot)—the benefit from the transfer will be outweighed by the resultant cost in terms of increased inequality.

Another strategy—very much in favour amongst experts today—is based on the hypothesis that the problems raised by the interaction between the supply and demand for labour, e.g. unemployment, are not quantitative but qualitative—that if an individual does not find a place in the market this is

because he has not received the "right" training. This means that some serious re-thinking has to be done about the structure of the educational system and in particular on the place of general education and vocational education. Despite its limitations—the quantitative aspects of the supply-demand relationship are far from negligible—the hypothesis is not without interest and is worth examining in greater detail.

But is it possible to define precisely the ideal "mix" between general education and vocational and technical training with respect to its effects on a developing economy as in the case of Panama? One can argue that the existing segmentation of the labour market in Panama makes individual job definitions both imprecise and inconsistent. As we have seen, the definition varies significantly between management, technical staff, accountants, secretaries, supervisors, and operatives; it varies by sector of activity, type of industry, trade or service etc. As a result, the potential functions of training are very variable; without reference to these variations, those responsible could aim at increasing the "scope" of individual choices and provide the youth with a form of general education which would enable them to switch freely from one activity to another. Some people reject this strategy as being too expensive; moreover, to maximise the options and potential mobility of individuals is to raise their economic aspirations (in terms of income), which in turn could act as a brake on investment projects of employers looking for a cheap supply of labour (or canalise this in a way contrary to the aims of a policy of full employment). Moreover, in the case of a country with Panama's dualistic structure, there is a risk that the development of a basically general system of education would accentuate even more the disparities and conflicts between the country's "modern" and "traditional" sub-populations.

As a result, many prefer training strategies which are aimed at matching potential job applicants with the specific requirements of each small segment of the labour market. This has been the theory underlying numerous projects and surveys on employers' needs in terms of training and on the definition of short-term specialised courses. It is considered that this strategy is less expensive and that it can be defined in such a way that it fits conditions in each region of the country. However, without detracting from the force of these arguments, one has to admit that on the basis of this survey, the requirements of undertakings are very different and probably vary over a period of time; the costs of such a strategy may, in the last analysis, prove higher than those of the previous strategy for a system of instruction based on general education. One reason is that there is always a considerable time-lag between changes which occur in industry and the corresponding changes in the curricula of the various types of educational establishment. What is more, maximum differentiation of school curricula does not necessarily contribute to strengthening the objectives of democracy and national unity, by virtue of the tensions which are created by economic (income) disparities. Moreover, a strategy of this kind, by subordinating the country's present and future interests to the employers' interpretation of their own needs in terms of

labour, puts the interests of the community as a whole at the mercy of the small class of those who own the means of production—which does not correspond to our conception of the relationship between education and the world of work, etc., and which is looked upon as undesirable by every country. Lastly, the benefit to be gained from such a strategy of specialisation is by no means certain, in view of the fact that many employers think that the productivity of their workforce will be greater if they themselves provide the training.

Basically, therefore, we cannot provide any clear-cut answer to the education v. employment problem facing Panama, although we have been able to give some indications as to the size of this problem. As the development of education gains momentum, one will see wider disparities appearing between occupation and education—changes and contrasts between the various categories of job, between workers in manufacturing, trade and the service industries, between employees in the modern sectors and those in traditional sectors, in government administration, in the public sector and in small family undertakings. Along with these changes, it is to be feared that the process of modernisation and development will cease to be cumulative. There are both divergent and convergent factors influencing the individual's participation in educational activities, the world of work and in other social institutions. Although it does not give any clear answers in this connection, the report argues that more knowledge is required and suggests that further research needs to be done in areas which it was not possible to cover in this survey—in particular, educational establishments and the individuals themselves. The report also suggests that planners should avoid using linear and over-simplified models if they wish to develop successful strategies for creating a modern labour force. Not only do they need to take account of the complex aspects outlined herein, but they must inevitably accept the fact that social and economic change does not occur without major disruptions.

Appendix I: The questionnaire

This translation of the questionnaire reproduces all the questions contained in the original Spanish version, but for reasons of space the tables for detailed information have been considerably shortened.

Republic of Panama

**Instituto para la Formacion y Aprovechamiento de Recursos Humanos
International Institute for Educational Planning (Unesco)**

**INSTITUTIONAL SURVEY
IN CONNECTION WITH A RESEARCH PROJECT
INTO EDUCATION AND EMPLOYMENT : 1977**

INDUSTRIAL SECTOR

Form No.

The information given in response to this questionnaire is strictly confidential and will only be used for manpower planning purposes within the country.

I. PURPOSE

To test a new research methodology based on the relationship between education and employment.

II. IDENTIFICATION OF ESTABLISHMENT

1. Name of establishment _____

2. Address and telephone number _____

3. Principal activity _____

4. Status of establishment:

- ☐ Public ☐ Private ☐ Mixed

5. Establishment

Ownership

Type

- ☐ Individual ☐ Head or main office
- ☐ Limited company or national group ☐ Affiliated to a national group
- ☐ Transnational ☐ Branch
- ☐ Co-operative ☐ Only one establishment

III. GENERAL DESCRIPTION OF ESTABLISHMENT

6. Year in which operations started _____

7. Financial situation (at 31 March 1977) :

- (a) Net worth _____
- (b) Total assets _____
- (c) Sales _____

8. Structure of employment as at January 1977

Departments and posts involved	Explanation (of posts considered)	Total number of workers

10. Features of posts selected (please consult Instruction Manual before selecting)

IV. SELECTED POSTS

Percentage of personnel in trade unions							
Average working week (in hours)							
Type of remuneration (give percentage)	Piecework (by unit)						
	Wage, with sliding scale						
	Fixed wage						
	Number of people	Casual					
		Permanent					
Main recruitment method (mark "x")	Other methods						
	Labour exchange						
	Through information centres and schools						
	Employment offices						
	Press advertisements						
	Recommendation						
	Promotion or redeployment in the same establishment						
Source of recruitment (give percentage)	Promotion or rotation in the establishment (internal)						
	Outside the establishment (external)						
	Total number employed in posts	Women					
		Men					
		Total					
Posts selected							

V. METHOD OF RECRUITMENT

Post: _____

11. Source of recruitment of workers for the post

Inside the establishment ☐

Outside the establishment ☐ if yes, continue at question No. 13

Both inside and outside
the establishment ☐

12. In cases of redeployment or promotion within the establishment

Indicate the recruitment criteria on a scale from 1 to 20, according to the order of importance of each one, i.e. put 1 for the most important, 2 for the next in importance, and so on. Write / if the criterion is not applicable.

Health ☐

Civil Status ☐ Specify _____

Age ☐ Specify _____

Sex ☐ Specify _____

Education ☐

Language ☐

Experience on the job ☐

Experience in the establishment ☐

Internal competition ☐

Opinion of supervisor or superior ☐

Leadership ☐

Aspirations ☐

Efficiency ☐

Conscientiousness ☐

Initiative ☐

Human relations ☐

Discipline ☐

Punctuality ☐

Personal appearance ☐

Others ☐ Specify _____

13. For recruitment outside the establishment

a. Criteria

Indicate the recruitment criteria on a scale from 1 to 8, according to the order of importance of each one, i.e. put 1 for the most important, 2 for the next in importance, and so on. Write / if the criterion is not applicable.

Health ☐

Civil status ☐ Specify _____

Age ☐ Specify _____

Sex ☐ Specify _____

Education ☐

Police record ☐

Language ☐

Relevant work experience ☐

Others ☐ Specify _____

b. Skills and attitudes

Punctuality ☐ Efficiency ☐

Discipline ☐ Personal appearance ☐

Human relations ☐ Personal aspirations ☐

Initiative ☐ Good disposition ☐

Conscientiousness ☐ Ability to communicate ☐
(reference) and convince

Others ☐ Specify _____

14. Recruitment both inside and outside the establishment

What characteristics do you consider unsuited to the post (Mark "x")

Opinion (specify characteristics)	Inside the establishment	Outside the establishment

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Describe the two main teaching institutions that are sources of recruitment for the posts selected

Details		Posts selected (specify)	
Institution 1 (name)			
Sector	Public		
	Private		
Location	City of Panama		
	Rest of metropolitan area		
	In the country		
	Outside the country		
Level of instruction	Primary		
	General secondary		
	Technical and vocational		
	University or higher		
	CENAFORP		
Institution 2 (name)			
		(Details as for Institution 1 above)	

17. Give the two main reasons for the changes (increases or decreases) occurring in the number of people employed from 1970 to 1977. (This question is only for establishments in which the structure of employment changed from 1970 onwards).

	1st reason	2nd reason
a. New legislation	<input type="text"/>	<input type="text"/>
b. Changes in technology	<input type="text"/>	<input type="text"/>
c. Restructuring and rationalisation of production	<input type="text"/>	<input type="text"/>
d. Changes in type of production	<input type="text"/>	<input type="text"/>
e. Reduction in the establishment's level of activity	<input type="text"/>	<input type="text"/>
f. Growth in the establishment's level of activity	<input type="text"/>	<input type="text"/>
g. Other reasons	<input type="text"/>	<input type="text"/>

18. Earnings relationship

Specify the earnings relationship between a number of posts in the establishment, taking as base No.1 the post having the largest number of workers (among the posts selected). For example, skilled workers 1, secretariat 1.5 or 2 times, and so on.

Post	Relationship
Specific base post	
Secretaries	
Book-keepers	

VI. ADDITIONAL INFORMATION

19. Name of the person replying to the questionnaire

20. Position in the establishment

21. Comments and suggestions

22. Visits made

Date(s) of interview(s)	Number of visits	Length of interview(s) (hours)

23. Comments and suggestions of interviewer

Name of interviewer

Date

ANNEX I

Structure of employment as at January 1970 and 1977

[illegible]

ANNEX 2

Specify the total number of workers in this post, by education, training and qualifications (FOR SELECTED POSTS ONLY)

Post: _____

Formal education (highest level obtained)		Training, retraining and qualifications obtained (in the formal system)				
		Total	Less than 3 months	3 months to less than 1 year	1 year and more	No training ¹
TOTAL						
NO GRADE						
PRIMARY	Complete					
	Incomplete					
SECONDARY, FIRST CYCLE	Complete					
	Incomplete					
GENERAL BACHILLERATO	Complete					
	Incomplete					
TECHNICAL AND VOCATIONAL	Complete					
	Incomplete					
UNIVERSITY OR HIGHER	Complete					
	Incomplete					
(1) Including non-formal in-service training						

Appendix II. Codification of the data

Although the questionnaire had not been pre-coded, most of the questions were of the multiple-choice kind. There were however two exceptions to this: the question on the employment pattern, and the choice of job categories provided.

1. Codification of employment patterns

In an initial questionnaire, respondents were asked to indicate their employment pattern on the basis of a prepared format which defined job categories in relation to the department concerned, e.g. management, administration and sales, research and methods study, production, maintenance, etc., and in relation to their position in the hierarchy, e.g. executives, technicians, employees, supervisors, skilled workers, unskilled workers, apprentices. It soon however became apparent from an initial discussion with Panamanian specialists that it would be impossible to expect respondents to adhere to a format which in many cases was unfamiliar to them. The solution finally adopted was to ask each undertaking to describe its employment pattern as it interpreted and applied this, stating the department and the exact job title with details of the functions involved. The employment patterns were codified subsequently on the basis of this data.

Occupations were classified using the single-figure code currently used by IFARHU. It lists ten job categories:

1. Management (*ejecutivos*): marketing managers, managing directors, sales managers, etc. "Staff classified in this category fulfil functions related to determining the policy of the undertaking, and the organisation, co-ordination and control of its activities".¹
2. Technical staff (*tecnicos*). These are "professionals" in the American sense of the term, i.e. doctors, lawyers, architects, engineers, analysts, etc. "Employees in this category carry out research and apply their knowledge to solving various problems".
3. Administrative staff. By this is meant staff whose functions are to ensure "smooth and efficient administration of the resources of the organisation in the performance of its programme of activity. In line with overall policy laid down by management,

1. *Resultados globales de la encuesta nacional sobre determinación de necesidades de formación profesional*. Instituto para la formación y approachamiento de recursos humanos, Departamento de Recursos humanos, Panama, 1971.

TABLE A.1. Codification of employment patterns.

Sectors	Management	Technical staff	Administrative staff	Supervisors
All sectors	Managers Assistant managers	Chemists Engineers Lawyers Economists Chartered accountants Architects	Administrative managers Personnel managers Chief accountants Warehouse managers Departmental heads Transport managers Maintenance managers	Production supervisors Foremen Section heads Traffic managers Warehouse managers Chief mechanics Maitre d'hotel Head chefs Maintenance supervisors
Industry	As above	As above	As above	As above
Health	Managing directors Medical directors	Doctors Pharmacists Nurses Senior surgeons Laboratory heads Laboratory assistants	As above	Ward supervisors Senior nurses Maintenance managers Catering managers Cleaning managers
Banks	As for all sectors	Banking analysts Chief accountants Credit analysts Lawyers Economists	As above	Inspectors Chief cashiers Dept. Heads Security managers Branch managers
Insurance	As for all sectors	Actuaries	As above	As above

Management services	Machine Operators	Workers with complex tasks	Workers with simple tasks	Maintenance
Secretaries Book-keepers Office-staff Account analysts Card-punch operators Messengers Receptionists Filing Clerks	Diesel mechanics Programmers Machine maintenance mechanics Machine operators	Electricians Automobile mechanics Cooks Tailors (shirts, trousers etc.)	Drivers Packers Manual workers Domestic workers Assistant cooks Clothing Ind. workers (shirts, trousers, etc.)	Sweepers Cleaners Other maintenance workers
As above	As above	As above	As above	As above plus Maintenance mechanics
As above		Junior nurses Wardmaids Orderlies	Manual workers Domestic workers Gardeners Cooks	
Secretaries Receptionists Filing clerks Book-keepers Messengers Budget assistants		Bank clerks Tellers		As for all sectors
Secretaries Book-keepers Punch-card operators Receptionists		Insurance clerks Cashiers for receipts	Manual workers	

- they establish standards and take decisions in order to direct and control administrative activities in relation to the production programme".
4. Supervisors. By this is meant "personnel, under the control of management and the administrative staff, responsible for applying decisions made by the organisation. They constitute the direct link between management and production workers".
 5. Management services staff. Those performing ancillary administrative functions: "their main task involves office activities, e.g. accounts, correspondence, secretarial".
 6. Workers operating complex machines and production equipment.
 7. Production workers performing complex tasks. Also coded in this category are staff performing basic tasks in banks and insurance companies (bank clerks, insurance clerks) and in hospitals (junior nurses, laboratory assistants, etc.).
 8. Production workers performing simple tasks.
 9. Maintenance and repair staff (industry). Cleaning staff (trade and service industries).
 10. Staff involved in selling a product: the purchase, sale and warehousing of goods and merchandise. This category includes not only the sales staff of retail establishments but also manufacturers' sales personnel (representatives, agents), waiters in restaurants, real estate agents, insurance agents, etc.

Table A.1 summarises the codification manual for occupations by sector.

This code, which is based essentially on the hierarchy of positions and functions within an organisation, has the disadvantage of not enabling a distinction to be made between the various types of activity, e.g. it groups together the hotel section with the restaurant section in an hotel-restaurant, or the catering services with the purely medical services in a hospital. However, its use was justified on several grounds: (i) the small number of hotel-restaurants and hospitals in the sample did not warrant using a much more cumbersome code; (ii) with these two exceptions, it could easily be applied to retail establishments, service industries and manufacturing industries and enable comparisons of employment patterns to be made between sectors which, on the face of it, are very different; (iii) the use of a single-figure code for job categories meant that the number of punch-cards required could be substantially reduced; and (iv) the fact that this code was currently being used by IFARHU meant that these employment patterns could be codified very rapidly.

2. Codification of the occupations selected

The choice of occupations—as with their codification—was not based on a detailed analysis of job content: the difficulties inherent in this type of analysis are well-known and, within the same sector of activity or even within two similar undertakings, it is difficult to find occupations covering exactly the same type of function. In view of this, to define occupations which cover the same type of function in all sectors from hospitals to retail establishments and industrial undertakings would have been an impossible task. The criterion we used for selecting and then codifying occupations was much more a criterion of rank within the hierarchy, and we have attempted to cover all levels in this hierarchy, from management which take the decisions and define policy down to the basic operative in the production of goods or services. Between those two extremes key occupations were selected: technical staff, essential functions common to all undertakings—accountants, secretaries—and lastly foremen or section heads who overlap both the management and production categories. Our

basic assumption is that, on account of the social relationships which grow up within an organisation, the characteristics of a clerk in a bank who checks accounts without ever taking any initiative are not very different from those of a skilled worker in industry. The splitting up of tasks between occupations in the service sector and the proletarianization of employees has become a well recognised feature in many developed countries.

Thus the occupations selected have been coded in relation to their position within the hierarchy. Table A.2 (pp. 146-7) summarises the codification used per sector.

It is immediately apparent from a quick glance at this table that our occupations are very heterogeneous in terms of job content. Moreover, it should also be noted that our occupations are not entirely homogenous even from the point of view of social relationships or position within the hierarchy.

The management category covers a wide variety of positions, ranging from the managing director, who may or may not be the owner, to the personnel manager and administrative manager and including the departmental managers of a bank—the “vice-presidents” who, in some multinational banks, can be very numerous. The “supervisor” category includes not only the traditional foreman who supervises a single production shop in a large undertaking, but also the factory manager (*jefe de planta*) in a concern which is too small to have foremen as such. Similarly, also classified as a supervisor will be the sales manager of a small retail establishment as well as a department head in a larger concern (the sales manager in this case becoming a manager).

From the point of view of their rank and function within the organisation, these positions are not completely similar. These reclassifications, however, were dictated by the employment pattern within the organisation and at the wish of the persons interviewed—it was the respondents themselves who decided whether a given position should be classified as *ejecutivo* or not. The codification is therefore consistent in respect to the organisation's criteria. It is likely however that if it had been possible to define more precisely the job categories selected, the results of the study would have been even clearer.

The distribution of job categories for the 85 undertakings in the sample was as follows:

1 – Management	57
2 – Scientific and technical staff	13
3 – Production supervisors	74
4 – Other supervisors	14
5 – Accountants	67
6 – Executive secretaries	12
7 – Secretaries	63
8 – Skilled operatives	61
9 – Unskilled operatives	37
10 – Sales staff/mechanics	21

Note the small number of executive secretaries and other supervisors (occupations which should not normally have been selected), as well as the small number of scientific and technical staff—occupations selected in certain categories only.

TABLE A.2. Occupations.

Job category	Industry	Retail Trade	Transport	Hotel/ Restaurant
Management	Managers Personnel managers Administrative managers Assistant managers	Managers Purchasing managers Assistant managers	As for Industry	As for Industry
Scientific & technical staff	Engineers Lawyers Economists	As for Industry	As for Industry	Lawyers Decorators
Production supervisors	Production managers Supervisors Foremen	Depot managers Sales managers Dept. managers Warehouse managers	Shipping managers Forwarding managers	Maitres d'hotel Floor managers Head waiters Head chefs
Other supervisors	Purchasing managers Depot managers Maintenance managers		Foremen Chief mechanics	Purchasing managers Reception managers
Accountants	Chief accountants Accountants Assist. accountants Secretary-book-keepers	As for Industry	As for Industry	As for Industry
Executive secretaries	Executive secretaries	Executive secretaries	Executive secretaries	Executive secretaries
Secretaries	Secretaries	Secretaries	Secretaries	Secretaries
Skilled operatives	Skilled workers	Sales staff Sales assist. Demonstrators	Mechanics	Mechanics
Unskilled operatives	Unskilled workers	Packers Warehousemen Manual workers	Drivers	Waiters Chambermaids Kitchen helps

Banks	Insurance	Hospitals	Other Services
Managers Assistant managers Department managers Branch managers	As for Industry	Medical directors Administrative directors	As for Industry
Assistant operations managers Credit analysts	Actuaries Systems analysts	Doctors Pharmacists Dieticians Nurses	Engineers Decorators
Chief cashiers	Section heads	Senior nurses	Foremen
As for Industry	As for Industry	As for Industry	As for Industry
Executive secretaries Secretaries Cashiers Tellers	Executive secretaries Secretaries Insurance clerks Cashiers	Executive secretaries Secretaries Junior nurses	Executive secretaries Secretaries Mechanics Launderers & finishers Ordinary laundry staff Drivers

Education and work in Indonesia

Jacques Hallak

in co-operation with Ibrahim Musa, Arya Jalil
and Azinar Sayuti

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This is the synthesis section of a case study on Education and Employment carried out in Jakarta and Padang in Indonesia. The case study is the result of a joint undertaking between Jacques Hallak of the IIEP and a team of Indonesian specialists from BP3K, Office of Educational and Cultural Research Development, of the Ministry of Education and Culture; the team members were Ibrahim Musa, Arya Jalil and Azinar Sayuti.

Introduction

A. Presentation

The purpose of this study is to develop a methodology for analyzing the ways in which human resources are used by the world of work, i.e., how do employers use various categories of occupations in relation to the characteristics (social and technical) of their firm? What are their recruitment policies for each occupation? What role does education play regarding access to various occupations? How do conditions of work differ between occupations? To what extent do workers' incomes relate either to their own characteristics or to those of the firm and to what extent do they depend more on the position they occupy in the firm's job structure?

It is clear that the questions raised above help to clarify the relationship between education and work; that is to say, by documenting these questions we can understand the actual manpower policies of firms and the role of education in this respect. But we cannot obtain indications on the future patterns likely to be followed by employers in the use of human resources, nor can we draw any conclusions as to how the educational system *will* or *should* change in order to fit in with future requirements by the economy for skilled manpower. None the less, it is hoped that by understanding the intricate relationships between supply and demand of manpower through studying firms' present and past personnel policies, we will make available a basis for studying future trends.

As mentioned already, the main purpose of this study is a methodological one: we were not planning to draw generalizable conclusions for educational policies and planning which would be relevant for all sectors of activity in the country, but rather to test the validity of the questionnaire developed, the relevance of the data collected, the feasibility of the survey on a wide scale, and the practicability of the methods of analysis used. The findings included in this report should be interpreted bearing this purpose in mind.

After having presented the scope of the survey and the sample selected in the following section, Chapter I will deal with the typology of firms and the patterns which occur in the use of human resources. In Chapter II we shall

discuss recruitment policies followed for various occupations, which should lead us to sketching out what we call "the demand function of manpower" by employers. Chapter III is devoted to analyzing the conditions of work for various occupations and interpreting these conditions as the results of interaction between supply and demand for various occupations. Finally, in a special section a few conclusions of the study will be drawn.

B. Scope of the survey and sample characteristics

The data were obtained by means of a survey of employers, carried out in (i) the metropolitan area of Jakarta in West Java and (ii) the city of Padang in West Sumatra. We have also limited the scope of the study to four sectors of activity which are very significant in terms of their contribution to the overall pattern of production in the two provinces:

West Java: of all the cities in Indonesia, Jakarta is the one with by far the largest number of hotels. Given the rapid development of the tourist industry in Indonesia, 'Hotels' is a most significant sector of activity for the study, and this is why we have chosen it. In the manufacturing industry, two sectors are very important in Jakarta: food processing and textiles. Because of the somewhat uncertain and critical situation of the textile industry, we decided to focus the study on that sector.

West Sumatra: this province has a completely different pattern of economic activity, with a large—disproportionate—share of the tertiary sector, i.e. trade and services, and a rather small secondary sector, except for Construction. After having examined the production by sector in the city of Padang, we decided to focus the research on "Trade" and "Construction".

Finally, we have limited the scope of the study to "medium"- and "large"-sized firms in Jakarta, with an average of 225 workers in Textiles and 169 workers in Hotels, in order to be able to make a significant analysis of job structures and mode of recruitment for certain key occupations. The small number of firms in Padang and the large proportion of small-sized firms have prevented us from limiting the "universe" of study. The average size of firms is 110 workers in Construction and 36 workers in Trade.

We have used a purposeful probability stratified sampling method. The rate of sampling was as follows:

6.6% for Textiles, number of firms sampled: 21

14.3% for Hotels, number of firms sampled: 20

50% for Construction, number of firms sampled: 20

50% for Trade, number of firms sampled: 19.

In order to overcome the problem of firms who refused to be interviewed, we have drawn "alternative samples", i.e. in case a firm refused to co-operate, another firm could be chosen for the study. This method has proved useful in view of the reluctance of some firms to co-operate in the study, in spite of the official support obtained from the Directorate-General of Tourism, the Direc-

torate of Tourism in Jakarta, the Directorate-General for Textile, and the Regional Department of Labour Force in Padang.

The questionnaire used in the interview was developed, tried out and tested on eight firms in Jakarta and two firms in Padang during the month of April 1977. Different questionnaires were used in each sector of activity, i.e. specific and different questions were put for Textiles, Hotels, Construction and Trade. Yet in the end, the overall structure and all but a few questions were the same: the first part of the questionnaire identifies the firm, its "social position" and "technical characteristics", and describes its labour force. The second part focuses on a selected few key occupations, describing the conditions of work and "workers' characteristics" (sex, education, etc.). The third deals with criteria and mode of recruitment of workers for each key occupation selected for study.¹ The major categories of occupations are: "managers", "high-level specialists", "technicians", "supervisors", "secretaries", "skilled operators" and "semi-skilled and unskilled operators".

The data collection took place in June, July, August, September and October 1977, and it was very difficult to obtain interviews from employers. Completion of the questionnaire required at least two visits, each interview lasting an average of two hours.

Table 1 describes the sample of firms surveyed. The eighty firms cover 10,857 workers in 1977, of which 4,722 in Textiles, 3,258 in Hotels, 679 in Trade and 2,198 in Construction.

TABLE 1. Brief presentation of the sample of firms surveyed

Sector	Size (number of workers)							Total no of workers
	< 10	10-30	30-50	50-100	100-200	200-500	> 500	
Hotels	2	5	3	5	0	3	2	3 258
Construction	3	2	4	3	4	3	1	2 198
Trade	6	7	3	1	2	0	0	679
Textiles	0	2	5	4	3	4	3	4 722
Total	11	16	15	13	9	10	6	10 857

1. It should be mentioned that the questionnaires were originally produced in English and then translated into Bahasa Indonesian. Unfortunately, in so doing the criterion "education" listed in the criteria for recruitment was mis-translated in the questionnaire on Hotels. This affected the results of the survey and led us to eliminate this sector in the cross-sectoral comparisons of the findings.

I. Typology of firms and job structures

The use by employers of different levels of skilled occupations depends amongst other things on the modernity of the firms, on their production techniques, and on their equipment.

Obviously, these aspects vary from one sector to another, and within each sector according to the type of product(s) of the firm. Hence, on the one hand, there is undoubtedly what is usually labelled a "technological determinism" of the use of human resources by the world of work.

On the other hand, it has also been agreed that the use of human resources is related to the system of organization of work, to legislation, to whether a firm belongs to the private, public or parastatal sector, to whether a firm is national, multinational or a joint-venture undertaking, etc. Such firms' characteristics—which we shall label "social dimensions"—also affect the use of human resources and should not be ignored in our analysis.

Finally, the use of human resources is related to the size, the capital and the position of the firm in the market.

In what follows we will attempt in Section A to "characterize" the firms with the help of their "technical", "position" and "social" dimensions. This should lead to sketching out a typology of the firms surveyed. Then in Section B we shall examine how the use of human resources and particularly job structures of firms are affected by firms' characteristics.

A. Typology of firms

As has been said earlier, the first part of the questionnaire was devoted to collecting data on firms' characteristics. We have identified twenty-four variables for characterizing the firms. Ten variables relate to technical characteristics, i.e., type of product, production process, equipment, book-keeping, sales' operation, booking services, NCR, maintenance system, change of process, modernity. Seven variables relate to social characteristics, i.e., legal status, autonomy, age, change of status, integration, bank relationship. Finally, seven variables indicate the market position, i.e., the "size" and "location" of the

firms. They are: number of employees, headquarters, capital, market, conditions, percentage of product exported, percentage of visitors.

Assuming that each firm is considered as a "total system" and that each variable contributes towards describing the system in its totality, it is felt that those variables which have the highest correlation with all the variables best characterize the "system", inasmuch as they are clearly associated with all the other characteristics of the firms. Therefore, cross-correlations have been computed for all the variables and for each sector. As is to be expected, in this way different factors will characterize firms in Textiles, Hotels, Trade and Construction. The results are as follows:

- (i) for all sectors, size and modernity¹ can be considered as "key" factors in characterizing the firms;
- (ii) "social" and "technical", as well as "position", dimensions should be used to characterize the firms in all sectors;
- (iii) the typology of firms can be defined with eight variables in Textiles, nine in Hotels, seven in Trade and six in Construction.

With these indications, we have constructed the typology of firms surveyed. Table 2 summarizes the characteristics of the firms sampled:

1. Most textile companies are "individual private", with a capital of less than 100 million Ruppiahs, less than 100 employees, using an "in-series" production process, working for the local national market and of a traditional style (batik).
2. Most hotels surveyed are providing multiple services (including restaurants), of a small size (less than 100 employees), using equipment which is about ten years old, without modern book-keeping system, with no special booking services, not using NCR and of traditional style.
3. The typical construction firm surveyed is an "independent private" partnership, located in Padang, with less than 200 workers.
4. Most trade firms are "independent private", of a small size (less than 100 workers), using equipment which is about ten years old, and of traditional style.

Hence, the public sector is not well represented in the survey, nor is the "multinational" sector, nor the "very modern" companies. This should be borne in mind when interpreting the replies given by the employers and the conclusions of the study.

B. Employment patterns and job structures

The data collected were analyzed using the ISCO of the ILO as a reference base, with a view to identifying a number of "job categories" relevant to the

1. Except for Construction, in which all firms are traditional.

TABLE 2. Typology of firms.

Sector	Firms' characteristics	Distribution		
Textiles	Status	P.T. = 8	Individual = 11	C.V. = 1
	Capital	< 100 m.R. = 14	100-400 m.R. = 4	> 400 m.R. = 3
	Size	> 200 = 3	100-200 = 3	< 100 = 11
	Production process	Continuous = 6		Series = 15
	Market	National = 16	Local = 1	International = 4
	of exports	0% = 17	20-40% = 2	40-60% = 1
	Modernity	Very modern = 1	Modern = 7	Traditional = 13
Hotels	Age	< 1965 = 7	1965-1970 = 5	> 1970 = 8
	Type of product	Single = 6		Multiple = 14
	Size	> 200 = 3	100-200 = 2	< 100 = 15
	Equipment	< 1965 = 5	1965-1970 = 15	> 1970 = 1
	Book-keeping/control		No = 14	Yes = 6
	Booking service	Internal = 15	Net-work < 1965 = 1	Net-work > 1965 = 4
	Using NCR	No = 13		Yes = 7
	Maintenance system	By request = 1	Occasionally = 9	Regular = 10
	Modernity	Very modern = 2	Modern = 5	Traditional = 13
Construction	Autonomy	Subsidiary public = 3	Independent private = 16	Subsidiary private = 1
	Status	P.T. = 5		C.V. = 15
	Location H.Q.	Jakarta = 3	Padang = 16	Other = 1
	Capital	< 100 m.R. = 7	100-400 m.R. = 3	No reply = 10
	Size	> 200 = 4	100-200 = 4	< 100 = 12
Trade	Autonomy		Independent private = 17	Subsidiary private = 2
	Size	> 200 = 0	100-200 = 2	< 100 = 17
	Equipment	< 1965 = 2	1965-1970 = 15	> 1970 = 2
	Sales operation	None = 16	Automatic = 3	
	Integration	None = 11	Integrated = 8	
	Modernity	Very modern = 0	Modern = 3	Traditional = 16

C.V. = Partnership; P.T. = Limited company; m.R. = Millions of Ruppiahs.

study. These categories do not coincide with the one-or-two-digit classifications of the ILO; they have been constructed in relation to the hierarchical organization of the firms, i.e. "management and what relates to it", "foremen and supervisors", "operators" (and not "workers"). A further distinction is made between "technicians", "skilled operators" (those having to implement complex tasks) and "unskilled operators" (those having to implement simple tasks). Table 3 summarizes the job structures by sector and

TABLE 3. Job structure by sector in 1977 (percentages).

	Textiles	Hotels	Construction	Trade	All sectors
Managers	1.0	1.0	1.2	2.2	1.0
High-level specialists	0.1	1.0	1.8	0	0.6
Support to management	2.6	8.6	3.6	7.7	7.5
Technicians	2.6	10.6	1.1	0	4.1
Supervisors	7.6	1.6	5.6	3.4	5.1
Skilled operators	77.2	73.8	32.0	7.2	61.2
Unskilled operators	8.8	4.0	54.6	79.4	20.4

shows that the forms of division of work vary significantly from sector to sector:

1. The proportion of high-level personnel—managers, high-level specialists—is roughly the same in all sectors, although the largest proportion is found in Construction and Trade, probably because of the large number of small firms in these sectors.
2. The proportion of technicians and administrative personnel (support to management) varies considerably: only 2.6 per cent in Textiles, 3.6 per cent in Construction, reflecting the production process of these industries; it is high in Trade and Hotels, owing to specific needs for secretarial and administrative staff in these sectors.
3. The large proportion of batik firms in Textiles, the “traditional” style of the construction sector and the “family-trade firms” mean that very little use is made of technicians. On the other hand, most large-sized hotels have their own “electric generators”, the maintenance of which requires a large number of technicians.
4. The proportion of “supervisors and foremen” indicates the highly-structured organization of work in Textiles and Construction; the lower percentage of foremen in Trade is due to the fact that in many companies this function is performed by the manager himself. The case of Hotels is less easy to explain.
5. The proportion of skilled workers is high in Jakarta and low in Padang, owing partly to the different requirements in the four sectors of activity, partly to the level of modernity of the firms involved, and partly to easier access to jobs for skilled manpower in the metropolitan town. The opposite is true for unskilled operators. It is still important to note the very low proportion of unskilled operators in Hotels.

The analysis of the distribution by age of employees and the trend over the period 1970-77 for the two sectors for which data were available, namely Hotels and Textiles, suggest two comments:

1. The higher the position in the job structure, the older the employee: almost no workers below the age of 20 occupy the following job categories:

managers, high-level specialists, support to management, technicians and foremen. On the contrary, 8.8 per cent of skilled operators and 40 per cent of unskilled operators are below 20 years of age.

2. From 1970 to 1977 the proportion of support-to-management staff has decreased from 12 per cent to 8.5 per cent and the proportion of foremen increased from 2.6 per cent to 5.1 per cent for Textiles and Hotels. These significant changes are due principally—according to the employers—to an increase or decrease in the level of activity of the firms. Yet some employers indicated that the modifications in the job structures are due to (i) change in the production process and (ii) nationalization and re-organization of the operation of the firms.

In order to obtain more information on the relationship between job structures and the characteristics of firms (social, technical and position), we have constructed a number of indicators based upon the job categories. These indicators are:

$$S_1 = \frac{\text{Foremen}}{\text{Total operators}} = \text{staffing ratio by foremen}$$

$$S_2 = \frac{\text{Managers + high-level specialists}}{\text{Total operators}} = \text{staffing ratio by management}$$

$$S_3 = \frac{\text{Support to management}}{\text{Total operators}} = \text{staffing by support to management}$$

$$S_4 = \text{Technicians/operators} = \text{staffing by technicians}$$

$$S_5 = \text{Skilled operators/operators} = \text{ratio of skilled operators}$$

$$S_6 = \text{Total management/other workers}$$

$$S_7 = \text{Technicians/total workers.}$$

We have tested the hypothesis that there is some degree of association between employment patterns (measured by $S_1 \dots S_7$) and firms' characteristics, by computing zero-correlations between the two sets of variables. Table 4 indicates some significant results.

The most striking conclusion of this table is that S_5 , the ratio of skilled operators, is clearly associated with most characteristics of firms, technical, position and to some extent social; on the other hand S_1 —the staffing by foremen—does not seem to be associated with firms' characteristics;¹ similarly S_7 —the ratio of technicians—shows little association (mainly with the age of firms, their production process and their integration). As can be expected, the staffing by management is clearly related to size, capital and the bank

1. This confirms the opinion of employers who explained the pattern of staffing by the level of activity of the firm.

TABLE 4. Firms' characteristics and staffing ratios (significant coefficients).

	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇
2 Size	—	-0.468	—	—	—	-0.484	—
5 HQ	—	—	—	—	-0.417	—	—
6 Age	—	—	—	—	—	—	0.300
8 Capital	—	-0.310	-0.455	—	—	-0.307	—
9 Type of product	—	—	—	—	0.337	—	—
11 Production process	—	-0.294	-0.506	—	—	-0.328	-0.340
13 Book-keeping	—	—	—	—	0.483	—	—
15 Integration	—	—	—	0.399	-0.313	—	0.383
16 Booking service	—	—	—	—	0.687	—	—
17 NCR	—	—	—	—	0.541	—	—
18 Maintenance	—	—	0.399	—	0.802	—	—
21 Bank relationship	—	0.388	—	—	-0.507	—	—
22 Market	—	—	—	—	-0.688	—	—
23 Condition	—	—	-0.425	—	-0.786	—	—
25 Percentage of visitors	—	—	0.449	—	0.761	—	—

relationship of the firm. Finally, it appears that, in general, the "social dimensions" of the firms do not seem to be associated strongly with the staffing patterns.

The lesson we draw from this analysis is that although the apparent job structure in each sector relates to the kind of economic sector it refers to, this relationship is statistically weak. In addition to the small number of observations, the main reason is that there exists great dispersion around the reported means, so that one cannot confidently rely on observed occupational coefficients in order, for example, to assess future manpower requirements by economic sector or for the economy as a whole.

II. Recruitment and promotion policies

As has been shown in the preceding chapter, firms' characteristics affect their use of human resources. Moreover, employers in Indonesia do not apply the same recruitment and promotion policies; in fact, not only will recruitment and promotion criteria vary from occupation to occupation within the same firm, but for the same occupation the criteria will vary from one type of undertaking to another (cf. typology), and in addition the same employer will change his attitude as regards the same job over the course of time, partly because of changes in the "quality" of available manpower and bargaining power of workers, partly because of changes in regulations concerning labour, and partly for other reasons.

When one refers to "demand for labour", therefore, one has to specify the type of enterprise, the nature of this demand, and its socio-economic context. In this respect, from the point of view of educational planning in particular, a number of hypotheses and theories have been put forward in recent years. These have to do with:

1. The "over-emphasis on qualifications" or "credentialism", i.e., for the same job, employers' requirements with regard to the educational level of applicants would have considerably increased.
2. The place of education in recruitment and promotion policies. It has been suggested that if one makes a distinction for each applicant between his ascriptive characteristics, his experience and his educational background, it would seem that employers tend to attribute more importance than one thinks to non-educational factors in a candidate's eligibility for certain jobs.
3. The consequences of this situation with regard to the relationship between education and the world of work. Certainly the problem of over-emphasis on educational records presupposes an "autonomous" development of the educational system, independently of the world of work. But employers' attitudes—in their selection policy—to the "educational aspects" in the dossier of the applicant for the job cannot but influence, in the final analysis, the form, content and structure of the educational system.

The object of this chapter is to attempt to test the validity of these statements. In order to do this, the first step is to study the relationship between schooling and vocational (special) training over time. Then we will classify the cognitive and ascriptive factors of recruitment in relation to the employer's position with regard to selecting applicants; this will include analysis by occupation and type of undertaking. Then an analysis will be made of the place and importance of non-cognitive factors in recruitment and promotion policies with a view to building up a job-profile pattern on the basis of the pertinence and relevance of these factors for the categories of jobs concerned. And lastly, we shall attempt to outline an employer's "demand of labour" function.

In order to make a meaningful analysis, we had to make a careful selection of very specific categories of occupations—which could be compared from one firm to another and across sectors. They were "managers", i.e., belonging to the "central" department of the firm or heads of major departments with responsibility for making decisions; "technicians" of middle level (not an engineer) mainly responsible for maintenance of equipment in the service sector; "book-keepers", usually attached to the administrative department of the firms and belonging to the "staff" of the company (if there was no book-keeper, it was decided to choose the top-level "accountant"); "secretaries", i.e., simple typist (not specialized secretaries, or director's assistant); "supervisors" are "foremen" in Textiles and Construction, chief of a group of "room attendants" in Hotels, or chief of "salesmen" in a department store. "Skilled operators" are not necessarily skilled, they are the main group of workers just above the lowest category of workers; in some sectors they are skilled (Textiles) but in very specific tasks. "Unskilled operators" is the lowest category of occupation in the company.

We have used these seven categories of occupations as a basis for our investigation on recruitment and promotion policies; they constitute a range of situations sufficiently large to cover many contrasting conditions in the world of work. Some occupations are in direct hierarchical relations, i.e., "supervisors" to "skilled operators"; others in general hierarchical relations, i.e., "managers" to other workers; finally, "book-keepers", "secretaries" and "technicians" are in a sense "para-hierarchy". (This does not mean that they do not belong to a hierarchy, but that in the overall structure of firms they are "service workers" and not in line with the "production organization".)

A. Changes in educational requirements

Employers were requested to state the minimum levels of education and training required for recruitment of workers in 1970 and in 1977 for each of the occupations studied. The following observations are based on the comparison of these data (see Table 5). The comparison of the frequency of educational levels for the various occupations is particularly striking. From 1970 to

TABLE 5. Educational and training requirements, 1970 and 1977.

	Education (years)		Training (months)	
	1970	1977	1970	1977
Managers	12	12	4	5
Technicians	9	9.5	0.5	0.5
Book-keepers	10.7	11.1	3	5
Secretaries	9	10	2.5	3
Supervisors	8	9	1	2
Skilled operators	5	6	1	1
Unskilled operators	4.4	4.7	0.3	0.5

1977, with the exception of managers, for every occupation the average number of years of education required has increased. Even for occupations which supposedly do not require a sound basic education—unskilled operators—the average number of years of education required has increased—although only slightly. The total number of employers declaring that no education is required for recruitment has declined from 51 in 1970 to 39 in 1977.

This increase in the demand for qualifications is also borne out by the comparison of employers' requirements in terms of special training for the various occupations. With the exception of technicians and skilled operators, the average number of months of training required has increased for all occupations.

Altogether these findings are consistent with the theory of "credentialism", i.e., that employers modify their requirements independently of their real need for qualifications and in relation to the "supply" or to the level of education and training of the job applicants. The educational system, developing in an autonomous manner, or because of factors exogenous to the world of work (social demand on education expanding because of cultural, economical—wage differentials—and social factors), raises the level of qualifications of the younger generation, which encourages employers to raise their sights.

B. Recruitment practices

The specific relationships between education and employment can be assessed in another way, i.e. by studying the conditions for access to various occupations. This can be done by specifying (i) the importance of education as a criterion for recruitment and (ii) the attitudinal profiles defined by employers for the various job categories. Employers were asked to supply this informa-

tion. This consisted of ranking in order of importance education and the other criteria used by employers for "screening" job applicants, and then defining the 'attitudinal' characteristics of a good worker in a particular job.

1. Education as a criterion for recruitment

As with all opinion surveys of this kind, there is some latitude on what the respondents consider as first, second and third criteria of importance. For this reason, we report what we consider to be a more robust idea of the importance of the different criteria of hiring, namely the percentage of employers who stated the criteria to be relevant ("Recruitment Relevance Factor") in the recruitment division.

Tables 6 and 7 give this information for two modes of recruitment i.e. internal and external.

The following comments can be made:

- despite a number of similarities, employers rank criteria differently depending on whether it is a question of "promotion" (internal recruitment) or "hiring" (external recruitment). For example, age and sex have a relatively higher ranking for external recruitment than for internal;
 - in most cases, education is very important as a recruitment criterion: the number of cases where education is judged to be "irrelevant" is minimal. This statement, however, needs qualifying in several respects: in the case of external recruitment, education is ranked in first place for book-keepers but in the second place for managers, technicians, secretaries, supervisors; in third place for skilled operators; and of little relevance for unskilled operators. In the case of internal recruitment, education is in first place for secretaries, skilled operators, and managers;¹ in second place for technicians; in third place for supervisors; and in sixth place for book-keepers. Here one begins to see the outlines and first evidence of the "qualitatively" different roles of education as a criterion for recruitment; this has important implications with regard to the relationship between education and the world of work:
- (i) for those occupations which represent by far the largest proportion of workers studied, i.e. skilled operators, education plays a minor role (or at least not a major role) for promotion to supervisors; but a major role for access from within the firms (from unskilled to skilled operators) (probably because of the large number of uneducated in the bottom group);
 - (ii) obviously, it is not by accident that employers rank education as criterion number one for certain job categories and low on the list for others. When educational requirements show a strong association (correlation) with characteristics of firms, one would expect to see this criterion ranked high; the opposite is true for occupations for which there is a weak association between educational requirements and firms' characteristics;

1. The number of cases which are "irrelevant" is minimal.

TABLE 6. Recruitment relevance factors by occupation (internal).

Criteria	Managers	Tech- nicians	Book- keepers	Secre- taries	Super- visors and Foremen	Skilled operators
Marital status	36	36	42	29	43	56
Age	96	73	89	81	91	44
Sex	71	91	63	52	83	89
Training	39	18	42	19	0	22
Experience	71	45	79	67	63	67
English	32	9	11	14	14	44
Speciality	46	36	47	43	43	22
Recommendation	68	64	42	48	51	22
Education	96	73	68	86	69	89
IFV	57	73	26	19	40	33
Leadership	82	45	11	29	57	25
Initiative	68	27	32	67	43	58
Give orders	71	73	5	24	46	8
Communication	46	27	21	43	31	0
Energetic	18	18	5	10	31	17
Human relations	71	18	11	29	34	17
General behaviour	4	55	5	0	3	17
Responsibility	32	9	32	10	40	33
Reliability	46	27	74	67	57	33
Dedication	11	36	16	0	3	25
Accuracy	39	36	100	76	51	50
Perseverance	32	64	32	52	17	42
Honesty	57	36	74	71	54	83
Follow orders	11	64	37	57	26	25
Punctuality	7	18	5	24	29	8
Appearance	11	9	0	14	9	0
Cleanliness	11	0	16	52	17	17
Total observations	28	11	19	21	35	9/12

— the pattern for special training as a criterion varies very much from occupation to occupation. Surprisingly enough, however, it is never an important criterion: for example, training is judged “irrelevant” for access to supervisors (internal recruitment) and of little relevance for access to unskilled and skilled operators’ jobs;

— professional experience comes close to the top of the list for managers (external recruitment) but rather average or low—judging from the number of irrelevant cases—for other occupations;

— age and sex, i.e. ascriptive criteria, are considered to be important in recruitment procedures; it is a striking result that age is considered as a relevant criterion for all employers when recruiting supervisors and secretaries, and for all except 1-5 employers for all recruitment to all job categories.

TABLE 7. Recruitment relevance factors by occupation (external).

Criteria	Managers	Tech- nicians	Book- keepers	Secre- taries	Super- visors and Foremen	Skilled operators	Unskilled operators
Marital status	70	35	50	58	56	38	51
Age	90	83	83	100	100	91	82
Sex	80	91	60	79	78	93	93
Training	50	48	43	53	17	5	3
Experience	90	17	63	68	50	40	40
English	60	4	17	63	39	19	2
Speciality	30	48	57	21	33	34	5
Recommendation	70	43	30	32	28	34	23
Education	90	83	87	89	94	64	4
IFV	20	13	17	11	17	10	5
Leadership	100	13	13	0	44	10	0
Initiative	40	52	37	42	72	38	25
Give orders	30	9	3	0	50	10	0
Communication	30	17	17	26	50	7	9
Energetic	20	22	10	11	17	17	16
Human relations	50	26	3	21	56	36	30
General behaviour	30	26	20	32	28	38	14
Responsibility	70	74	40	26	39	31	16
Reliability	30	39	53	26	39	50	54
Dedication	20	26	13	11	6	12	18
Accuracy	20	52	77	63	33	52	35
Perseverance	0	22	40	16	17	45	51
Honesty	50	30	63	53	61	50	51
Follow orders	0	48	13	32	33	64	81
Punctuality	0	30	13	47	33	40	39
Appearance	20	4	6	26	22	17	11
Cleanliness	30	4	53	53	28	33	5
Total observations	10	23	30	19	18	58	57

Similarly, sex is an important criterion; it comes in first position for internal and external recruitment of skilled operators (i.e., the largest group of workers). Marital status, whilst not generally in a high rank, is considered as a relevant criterion by 54 per cent of the employers (all occupations: 113 out of 215);

— finally, “recommendations” for external recruitment and “opinion of supervisors” occupy a medium position in the list of criteria. This is not surprising in view of the rather traditional, informal, unstructured labour market in Indonesia (as we shall see in Chapter III).

Altogether, and to sum up, the grouping of criteria as “cognitive” and “non-cognitive” shows that cognitive criteria (education, experience, English, special training, etc.), while occupying a dominant position for selection of

applicants, are not—far from it—the sole criteria for recruitment. The place of ascriptive criteria is significant for all occupations; judging by the number of relevant cases, this comes first or second for all internal recruitment.

Moreover, the “relative” position occupied by ascriptive and cognitive criteria depends on job categories and mode of access to occupations.

For recruitment by promotion, ascriptive criteria help to sort out amongst the existing stock of workers those who may be eligible for promotion. This explains why all (almost all) employers believe these criteria to be relevant, but when compared with the other criteria (mode, average), they come out top for workers low down in the hierarchy (in this case, the skilled operators), give rather “mixed” scores for book-keepers and managers (top of the hierarchy) and in-between scores for other occupations.

For external recruitment, “cultural and sociological” factors seem to have a greater effect: “sex” comes first for unskilled operators and “age” second or third; no employer considers “age” as irrelevant for book-keepers and foremen and only one employer believes it is irrelevant for managers; only two employers consider sex as irrelevant for managers and technicians. However, the relative position of cognitive and ascriptive factors follows a similar pattern to that for promotion when climbing up the occupations hierarchy from the bottom to the top—high scores for ascriptive at the bottom, mixed at the top, in between for other occupations.

To round off this section, one question still remains to be answered, since up until now we have been referring to employers’ policies without making any distinction between them. Is the method of recruitment (the ranking of criteria) the same irrespective of the sector of activity and of the firm’s characteristics?

A reply to this question would have required a much larger sample for it to be statistically significant. Hence, we will confine ourselves to a few indications extracted from the questionnaires.

Comparing the ranking criteria for Textiles and Hotels (book-keeping, external recruitment) we found that experience is judged to be totally irrelevant by employers in the textile industry, whereas it scores very high in Hotels; age is judged relevant by all employers in Hotels and by 6 out of 9 in Textiles. Marital status ranks higher in Hotels than in Textiles, but sex, English and recommendations score similarly in the two sectors.

Table 8 gives another illustration of the role of firms’ characteristics—here status—in the mode of ranking of criteria, i.e., in the shaping of the preference function of firms. The figures are self-explanatory and need no further comments.

2. Attitudes required

A list of eighteen “character traits” (attitudes, personal qualities, aptitudes) was submitted to the respondents with the request that they indicate those which they regarded as the most relevant, ranking them by order of prefe-

TABLE 8. Criteria for external recruitment: number of cases irrelevant, by status of firm

Criteria	Limited company	Partnership	Individual firms
Marital status	4	2	10
Age	1	0	2
Sex	4	0	n.a.
Special training	8	2	11
Professional experience	7	2	11
English	7	2	11
Speciality	0	1	1
Recommendations	6	0	7
Education	6	2	11
Number of observations	8	2	11

rence. The results are included in Tables 6 and 7, which give the recruitment relevance factor by occupation and internal v. external source of recruitment. In view of the limited number of replies, comments will be confined to the following occupations: book-keepers (close to management) with some references to managers; supervisors; skilled operators with some references to secretaries; and unskilled operators.

(a). *Book-keepers and management.* Book-keeping is an occupation for which recruitment mainly takes place outside the firm. The five traits with the highest scores are: accuracy, responsibility, perseverance, cleanliness and honesty.

Managers are mainly recruited from within the organization. The five traits with the highest scores are: IFV, leadership, giving orders, human relations and honesty.

The occupations in the top position have a "profile" which can be summarized by "identification with the firm's values". (This includes initiative, efficiency, etc.).

(b). *Supervisors.* This is a position filled mainly from within the firms. The five traits with the highest score are: leadership, giving orders, reliability, accuracy, and honesty. The similarities with the preceding occupations are striking, with one important exception: "accuracy" is important for supervisors, who need no doubt to set an example on the shop floor. Supervisors are in an ambiguous position between managers and executives.

(c). *Skilled operators, secretaries.* These occupations are recruited mainly from outside the firms, although about one-fourth of the recruitment comes from within. A skilled operator coming from within is expected to be "honest", "accurate", and "persevering". The five traits with the highest score for

skilled operators recruited from outside are: honesty, punctuality, accuracy, reliability and ability to "follow orders". Clearly here we get the insistence on the need to obey and respect the rules. On the other hand, IFV and leadership qualities disappear from the list, as the quasi-totality of employers interviewed consider these traits as irrelevant. A worker promoted to a job of secretary is supposed to have the following traits: cleanliness, honesty, ability to follow orders, accuracy and initiative. Recruited from outside, a secretary should have the following profile: accuracy, punctuality, cleanliness, honesty and initiative. The similarity with the profile of skilled operators is significant.

(d). *Unskilled operators*. This is a position which is filled entirely through external recruitment. These workers are not required to internalize firms' values, to have initiative or leadership qualities, or to give orders. Nor are they required to have a good appearance, or to be clean. The ability to follow orders, be punctual, reliable and energetic are the traits expected.

Thus as one moves across the range of occupations selected, one passes from the profile of the top-rank members of the staff, who are not bound to rules and regulations, but who are expected to identify with the values of the company, be capable of leadership, etc., to the "subordinate" worker at the other end of the scale who has to accept the constraints of his job ("punctuality") and carry out his duties without creating any difficulties ("follow orders"). Employers look upon this hierarchy of conduct as essential to the proper functioning of their business; it is not of direct concern to us whether this hierarchy is of historical, sociological or any other origin, what is important is that employers think that this ranking of job profiles is beneficial to their firm; they will do all they can to maintain and strengthen it, since it enables them to achieve their management objectives.

D. The outline of the demand function

If one accepts this argument, one can advance one stage further in understanding the logic underlying employers' behaviour with respect to their recruitment and promotion policies.

Generally speaking, whatever the characteristics of the undertaking, an employer will attempt to formulate his demand either by directly specifying the aptitudes and attitudes required from his workers (the hierarchy described above) or by specifying the qualifications which, in his opinion, are associated or correlated with these aptitudes and attitudes (the selection and recruitment criteria discussed earlier), or by using both. As we have seen, these factors are numerous and have to do with an individual's ascriptive, cognitive and non-cognitive attributes. If efficiency is a required standard (trait) and if an employer considers, say, that for technical staff, efficiency is linked with

"diplomas", for "supervisors" with "seniority" and for operators with "age" or "sex", he will rank these criteria in accordance with these patterns of association. This explains why ascriptive criteria will take precedence over cognitive criteria or *vice versa*, depending on which occupation is involved.

However, an employer does not arrive at his opinion accidentally—it is linked to sociological and cultural factors, e.g. "you do not put a woman supervisor at the head of workshop composed of men" or "you do not have a manager below twenty years of age" or "the complexity of the job of a technician requires initiative", etc.; it is also linked to the technical and organizational features of an undertaking, which determine both occupational structure (see Chapter I) and the performance standards required from workers for the proper functioning of the organization.

At the top of the scale, judging by the "recruitment relevance factor", emphasis is placed in the following order on these elements of a profile of a good manager: leadership (100 per cent); age, experience, education and "IFV" (90 per cent); sex (80 per cent). That is to say both ascriptive, cognitive and attitudinal factors are combined to determine "what makes a good manager".

At the bottom of the scale, i.e. unskilled operators, we can note the following most important elements: sex (93 per cent), age (82 per cent), "follow orders" (81 per cent); reliability (54 per cent); and "marital status", "honesty", "perseverance" (51 per cent). Hence no cognitive criteria appear in this list.

The "key position", i.e. the production supervisor in a plant, requires a combination of traits linking him both with management and executants: age (100 per cent), education (94 per cent), sex (78 per cent), initiative (72 per cent), honesty (61 per cent) and "marital status", human relations (56 per cent).

Finally, "service occupations" i.e. accountant, secretaries, will have specific traits according to their status in the overall structure of the firms.

More particularly with regard to education and special training, it was felt that in spite of the small number of observations (80) a statistical analysis was needed to complete, in a more "quantitative" way, the "demand" function of the employers. With this purpose in view, we have tried to regress for each occupation educational requirements for 1977 and special training requirements (as dependent variables) in relation to firms' characteristics taken as independent variables (Tables 9a and 9b).

After having done some cross-correlation estimates, we identified those firms' characteristics to be used in the regression—avoiding collinearities. They are: size, status, autonomy, age of firm, production process. By using canonical regression (controlling for size and production process), we estimated the contribution of "social characteristics" of firms, i.e. status, autonomy and age; controlling for status, autonomy and age, we estimated the contribution of technical characteristics (production process) and position (size). The calculations suggest that regressions which have statistical signifi-

TABLE 9a. Education requirement in 1977 as a function of firms' characteristics (N = 75-80).

	Social characteristics			Technical characteristics	Position	R ² total	F	Constant
	Status	Autonomy	Age		Size			
Managers	R ² (β)	0.09 (0.306) (-0.002)	(0.022)	0.27 (0.528)	0.09 (0.305)	0.40	3.6	1.66
Technicians	R ² (β)	0.18 (0.413) (-0.014)	(0.155)	0.22 (0.482)	0.12 (0.353)	0.47	8.4	1.90
Book-keepers	R ² (β)	0.21 (0.455) (-0.068)	(0.088)	0.13 (0.373)	0.10 (0.328)	0.39	8.5	1.65
Secretaries	R ² (β)	0.04 (0.198) (-0.028)	(0.058)	0.48 (0.716)	0.07 (0.259)	0.57	2.4	2.33
Supervisors	R ² (β)	0.01 (0.097) (-0.017)	(0.082)	0.27 (0.536)	0.05 (0.266)	0.34	0.6	1.52
Skilled operators	R ² (β)	0.05 (0.023) (-0.139)	(0.186)	0.09 (-0.069)	0.12 (0.364)	0.22	1.6	1.27
Unskilled operators	R ² (β)	0.09 (-0.152) (-0.251)	(0.137)	0.02 (0.128)	0.04 (0.201)	0.18	2.8	1.23

TABLE 9b. Special training requirements in months as a function of firms' characteristics (N = 75-80)

	Social characteristics			Technical characteristics		Position	R ² total	F	Constant
	Status	Autonomy	Age	Production process					
Managers	R ² (β)	0.13 (0.378)	(-0.023)	0.03 (-0.167)	0.01 (0.092)	0.21	4.3	1.27	
Technicians	R ² (β)	0.04 (0.0164)	(-0.010)	(0) (-0.027)	0.02 (0.131)	0.06	1.0	1.10	
Book-keepers	R ² (β)	0.19 (0.441)	(0.105)	(0) (0.025)	(0) (0.013)	0.20	5.8	1.24	
Secretaries	R ² (β)	0.27 (0.529)	(-0.024)	(0) (0.000)	0.03 (0.179)	0.30	9.4	1.44	
Supervisors	R ² (β)	0.11 (0.249)	(0.145)	(0) (-0.086)	0.01 (0.098)	0.14	3.0	1.16	
Skilled operators	R ² (β)	0.16 (0.161)	(-0.043)	0.03 (-0.173)	(0) (-0.016)	0.19	4.7	1.23	
Unskilled operators	R ² (β)	0.03 (0.011)	(0.155)	0.04 (-0.198)	0.01 (0.096)	0.08	0.6	1.09	

cance are, in the case of educational requirements, the equations for managers, technicians and book-keepers; in the case of training requirements, the equations for managers, book-keepers, secretaries and skilled operators. With these limitations in mind we can risk the following conclusions:

— five variables “explain” 40 per cent of the variance of educational requirements for management; 47 per cent for technicians, 39 per cent for book-keepers, 57 per cent for secretaries, 34 per cent for supervisors, 22 per cent for skilled operators and 18 per cent for unskilled operators. The same variables have much less significance in explaining skill training requirements, as can be noticed from the figures in Tables 9a and 9b;

— technical characteristics of firms have different explanatory powers for different occupations; interestingly enough, for unskilled and skilled operators they contribute very little towards explaining educational requirements of firms, whereas they contribute from 13 per cent to 48 per cent in explaining the variance for other occupations;

— size of firms contributes little but not negligibly towards explaining the variations in educational requirements. It has little effect for special training requirements;

— the most important findings are perhaps the significant contribution of “social characteristics” in explaining the variance of educational and training requirements. This destroys the (still) highly controversial hypothesis of “technological determinism” of firms’ requirements in terms of human resources.

III. Interaction between employers and workers: study of the characteristics of the occupations

Chapter I has shown the large differences between firms' characteristics (by sector, size, status, autonomy, production process, market, etc.) and their effect on the use of human resources and job structures. In Chapter II we have described the contrasts between level of education of workers belonging to selected occupations and sketched out a "demand function" of employers for these key occupations in the employment structure. Ideally, one would like to examine how this "demand function" is "satisfied" by the labour market in confronting characteristics of firms and demand by employers with supply of manpower and characteristics of workers and taking into consideration the modalities of adjustment of supply and demand over a period of time. To do so, one would need to use "tracer studies" of workers, as well as "histories" of firms and of their human resources policies over a period of time. This is far beyond the scope of the present investigation, as we have limited our survey to employers and to one point in time. Hence, instead of making the "confrontation" we will study its effect through an analysis of the characteristics of occupations (but not of workers).

These characteristics are determined, in fact, by the interaction process between supply and demand in the labour market; in a sense they correspond to the point of equilibrium between desires of employers and their capacity to satisfy them (according to the condition of the supply) for each occupation; they are also determined by individual, legal and administrative factors which affect the supply as well as the employers' policies concerning use of human resources; they illustrate finally the stratification of the labour market in Indonesia.

The purpose of this chapter is to show that characteristics of occupations depend significantly on the firms to which they relate. To be a manager, a book-keeper or a foreman does not mean the same thing irrespective of which firm employs you; admittedly, the individual characteristics of workers—age, sex, life history, etc.—are important, but this importance varies in relation to occupations and firms. With this purpose in mind, we shall try to answer three questions: how are workers recruited? who is recruited and for which occupation? under what conditions does recruitment take place?

A. How are workers recruited?

In Indonesia in general and even in the capital city of Jakarta, the labour market is not yet structured following the European and North American model. Firms have the choice basically between placing advertisements in newspapers, organizing their own file of job applicants (for those firms which are fairly sophisticated) or simply recruiting informally through personal contact and recommendations; in general all firms make use of their "internal market" to fill job vacancies either through promotion or rotation of staff. Tables 10 and 11 describe the situation in the cities of Jakarta and Padang for the four sectors studied.

TABLE 10. Sources and mode of recruitment.

	Advertisements in newspapers	Recommendations	Company file	Contact with educational institutions	Promotion	Other
Managers	6	9 (20%)	13	—	7	10
Technicians	4	11 (32%)	12	1	6	—
Book-keepers	3	17 (36%)	8	1	3	15
Secretaries	4	10 (27%)	11	1	3	8
Supervisors	4	11 (20%)	7	—	11	9
Skilled operators	7	26 (44%)	12	—	1	12
Unskilled operators	4	21 (48%)	7	—	—	12

TABLE 11. Percentage of internal recruitment by sector.

	Textiles	Hotels	Construction	Trade
Managers	83	47	100	27
Technicians	33	15	56	—
Book-keepers	10	50	50	12
Secretaries	20	30	78	43
Supervisors	91	58	69	64
Skilled operators	0	20	0	62
Unskilled operators	0	22	0	8

In the first place, it is important to note the role of the "internal market" for filling some occupations: 91 per cent for supervisors and 83 per cent for managers in Textiles; 100 per cent for supervisors and 83 per cent for managers, 78 per cent for secretaries and 69 per cent for supervisors in Construction; 64 per cent for supervisors in

Trade, 58 per cent in Hotels. In many ways, for some occupations, this source of recruitment was the most important one during the period of the survey. This can be explained partly by the peculiar nature of the market in Indonesia at that time, partly by the composition of the firms surveyed (firms' characteristics) and partly by the occupations themselves. As a matter of fact, correlation analyses show a strong degree of association between (a) internal recruitment of managers, technicians, secretaries and skilled workers and capital and production process (bank relationship) of firms; (b) internal recruitment of book-keepers and modernity of firms (negative correlation). As mentioned earlier, the case also differs according to the sector; yet a pattern seems to emerge (see Table 11): some key positions in the firms (managers, supervisors), employers prefer to recruit from amongst their staff; for some other positions—technicians, book-keepers, secretaries—the situation is not so neat and will depend on the function performed in the firm and the current behaviour of employers.

Secondly, it is interesting to note the importance of "recommendations" as a mode of recruitment; for all occupations, between 20 per cent and 48 per cent of the firms declare that they recruit through recommendations. In spite of the small size of our sample, one can safely conclude that the labour market remains "informal" in Jakarta and Padang even in reasonably "structured" sectors of activity. As a matter of fact, adding the percentage of firms recruiting from the internal market to the percentage recruiting on recommendations, one may conclude that at least one company out of two uses these two sources of recruitment. Another interesting feature is that the higher the position in the hierarchical structure of the firm, the lower the proportion of firms using "recommendations" in recruitment; this is due to the fact that for "higher" occupations "promotion" is often preferred to recruitment from outside the firm.

Thirdly and in contrast, recruitment through "ads" or the "institutionalized market" is relatively marginal (10-15 per cent); educational institutions seem to play no role (or a very negligible one) as a source of recruitment. This is a striking result; one would expect these institutions to play some role, at least for certain occupations (secretaries, technicians, etc.).

B. Who is recruited and for which occupation? Under what conditions does recruitment take place?

In order to document these questions, we have collected data on age, sex, education and training of workers for different occupations.

1. Data by education and training

Table 12 shows the modal distribution for "training", i.e., for each occupation, where the number of employees is maximum for the period of training. For example, in the case of managers, the figures for seven firms show that

TABLE 12. Vocational training (modal distribution).

	No training	Less than 3 months	3-9 months	More than 9 months
Managers	32 (76%)		2	7
Technicians	27 (75%)	3	4	2
Book-keepers	30 (70%)		6	7
Secretaries	30 (75%)	3	4	2
Supervisors	44 (88%)	2	4	
Skilled operators	56 (82%)	4	5	3
Unskilled operators	51 (93%)	1	1	2

TABLE 13. Education (mean in years).

	5 or less	5-7	7-9	9-11	11-13	13-15	More than 15	Estimated total average
Managers	0	1	5	0	19	15	2	11.5
Technicians	0	5	7	17	0	0	0	9.0
Book-keepers	0	1	2	5	29	6	0	11.5
Secretaries	0	1	4	4	29	2	0	10.5
Supervisors	1	4	10	2	29	4	0	10.5
Skilled operators	12	24	12	6	14	0	0	7.5
Unskilled operators	18	28	4	4	1	0	0	5.5

the mode is more than nine months of training, for two companies it is three to nine months, for one firm it is less than three months and for thirty-two firms no special training is given. It is worth noting that the figures are very different depending on the occupation. Another comment worth making is that a very high proportion (most) firms declare "no special training" for all occupations; although in the case of managers, technicians, book-keepers and secretaries three-quarters of the replies belong to the column "no special training", the figure is 82 per cent for skilled operators, and around 90 per cent for "supervisors" and "unskilled operators". Lastly, note should be taken of the predominance of short and medium training ("less than nine months") amongst technicians, secretaries, supervisors and skilled operators, and the predominance of medium and long training ("more than nine months") amongst managers and book-keepers. These findings should be borne in mind when we come to the analysis of employers' requirements.

The average period of education also varies from occupation to occupation. Table 13 gives the distribution (in average number of years) for each of the

occupations selected. It will be noted that (i) the "hierarchy" of occupations is relatively well expressed by the number of average years of education per occupation: the ranking is managers/book-keepers, secretaries/supervisors, technicians, skilled operators and unskilled operators; (ii) the dispersion of the educational level between occupations varies from 1 for unskilled operators (5.5 years) to 2.1 for managers and book-keepers; (iii) there is a wide dispersion of educational level within each occupation. This last fact obviously reflects the differences between time of recruitment, and between sectors of activity, characteristics of firms and their personnel policy. Let us take a few examples in order to illustrate this.

(a). *Variations by sector of activity.* Whereas in Textiles and Hotels the "mode" of the statistical distribution of education for managers is 14 years, in Construction and Trade it decreases to 12 years. The "typical" technician in Construction has 12 years of education; in Textiles he would have 8 years of schooling. The average number of years of schooling for supervisors in Textiles is 9; in Hotels 5; in Trade 8 years and in Construction as high as 12 years. Unskilled operators mostly have less than 5 years of schooling in Textiles, 5 to 7 years in Trade and Construction, but more than 7 years in Hotels.

(b). *Variations by size.* *A priori*, one is inclined to think that large undertakings tend to be more demanding and small firms less demanding with regard to the educational level of their employees, or at least that there is a strong association between size and educational level of workers. This seems to be confirmed when one looks at cross-correlation coefficients of size with education for various occupations. The figures are: for managers 0.368; for technicians 0.399; for book-keepers 0.380; for secretaries 0.359; for supervisors 0.367; for skilled operators 0.396 and for unskilled operators 0.282. That is to say, all the correlation coefficients are significant (at 10 per cent level) except for unskilled operators.

(c) *Variations by status.* It will be remembered that the survey distinguishes between individual firms, partnerships and limited companies. One would expect that individual firms would demand less education than, say, "partnership" companies for the same occupation. For example, in Textiles the educational mean for foremen is 9 years in individual firms, and 10 years in "partnership" companies. Computing cross-correlations of status with educational mean of workers by occupation, we found a significant coefficient (at 5 per cent level) for all the occupations selected except for unskilled workers (where the correlation coefficient obtained was still significant at 10 per cent level).

(d). *Variations by modernity.* Again, the more modern the firm, the higher the level of education of its workers (all things being equal). Correlation coefficient

cients between index of modernity and educational mean show a strong association between these two variables for all occupations (at 10 per cent level of significance).

To sum up: despite the small size of the sample, the analysis of the average educational level and its dispersion has shown that:

- there is no simple relationship between occupation and education (even when we work at rather well-defined and detailed occupational classifications) but there is a parallel pattern between the hierarchy of job categories, the modal period of training and the average number of years of education;
- the technical characteristics (sector, modernity), the social dimensions (status), the position (size) of a firm seem to influence the educational level of its employees.

2. Data by sex

For the seven occupations studied women represent 36 per cent (3,310 out of a total of 9,190 workers), taking all the firms together (see Table 14). However, it should be noted that:

(a). Some occupations are not open to women—e.g., technicians—, probably for socio-cultural reasons.

(b). The percentage of women employed per occupation depends to a large extent upon the sector of activity; while 64 per cent and 78 per cent of secretaries are female in Textiles and Hotels respectively, the proportion decreases to 17 per cent and 16 per cent in Trade and Construction, partly because of the nature of the occupation, partly because of the higher "rate of activity" of women in Jakarta than in Padang.

(c). In Textiles and Trade, the higher the hierarchical position of an occupation, the smaller the proportion of women. Discrimination against women seems less noticeable in Hotels.

TABLE 14. Percentage of females by sector and by occupation.

	Textiles	Hotels	Trade	Construction
Managers	0	28	0	8
Technicians	0	0	0	0
Book-keepers	36	21	17	16
Secretaries	64	78	12	15
Supervisors	12	20	0	2
Skilled operators	58	1	0	0
Unskilled operators	55	3	35	2

3. Data by age

Taking the number of workers by occupation in each firm, we computed the average age by occupation and by sector (see Table 15). The results call for the following comments:

- (a). "Bad jobs" are occupied by the youngest workers; average age is lowest for unskilled operators. "Managers" have the highest average age.
- (b). The "range" between occupations, while significant, is small: 7 to 12 years, probably owing to the age-pyramid structure of the labour force in Indonesia ("young labour"). The average age of managers is 33 to 38 years.
- (c). Differences between sectors are not very pronounced, nor is there a strong association between firms' characteristics and age of workers; however, some significant correlations are found between managers, foremen, skilled workers and notably technicians and some firms' characteristics.

TABLE 15. Average age by occupation and by sector (in years).

	Textiles	Hotels	Trade	Construction
Managers	33	35	38	36
Technicians	27	27	—	33
Book-keepers	34	28	36	30
Secretaries	25	25	31	30
Supervisors	28	28	33	30
Skilled operators	24	26	30	32
Unskilled operators	21	24	27	29

Altogether then, to answer the questions raised in this section we can conclude that:

1. The "typical" manager is a man of 35 years of age with more than 13 years of education, with 9 months of special training, but often without special training.
2. The "typical" technician is a man of 30 years of age with about 12 years of education, with 6 months of special training, but in most cases without special training.
3. The "typical" book-keeper is a man—with a few exceptions—whose age ranges from 28 to 36 years with 12 years of education, often without special training or with 6 months' training.
4. The "typical" secretary in Textiles and Hotels is a woman of 25 years of age and in Construction and Trade a man of 30 years of age; a secretary has received 12 years of education with little (3 months) or no special training.

TABLE 16. Mean characteristics by occupation.

Occupation	Percentage unionised	Working hours ¹	Percentage on promotion possibility contract	Percentage vocationally trained	Allowances as percentage of total income	Years of schooling	Monthly income in \$ ²	
							Income	Salary
Managers	24	41.5	60	24	39	11.5	246	149
Technicians	27	41.8	62	25	44	9.0	120	67
Book-keepers	20	40.5	76	30	41	11.5	136	81
Secretaries	33	41.3	67	25	33	10.5	100	67
Foremen	28	40.5	65	12	36	10.5	113	69
Skilled workers	15	41.3	43	18	31	7.5	77	53
Unskilled workers	17	42.3	33	7	31	5.5	51	32

1. Does not include overtime.
2. 1 \$US = 415 Ruppiahs.

NOTE Observations refer to all sectors of economic activity.

5. The "typical foreman/supervisor is a man, age 30, with 12 years of education and no special training (exceptionally 6 months).
6. There is no "typical" skilled operator really; the situation varies a great deal from sector to sector, partly because of the characteristics of the sector, partly because of the definition adopted in the survey, i.e. an operator who performs a complex task or is just above the bottom category of occupations.
7. Nor is there a "typical" unskilled operator for the same reason; but average education would be less than 7 years and the average age around 25 years.

C. Conditions of work

Having sketched out the "profile" of workers, it is useful at this stage to describe the "profile" of the occupations themselves by examining the conditions of work. These conditions are determined at each moment in time by the power relationships between partners in the world of work, i.e., capacity of negotiation, regulations, relative scarcity by occupation, etc. In the questionnaire we limited ourselves to a few indicators; job stability, average number of working hours, unionization of workers, type of contract, system of promotion, salaries and income (see Table 16).

1. *Job stability*

Employers were asked to qualify the status of jobs, i.e., "permanent", "not permanent". On average, managers, book-keepers, secretaries and foremen are considered to be permanent jobs; 98 per cent of employers consider the post of manager as a permanent job; 84 per cent of employers consider the post of technician as a permanent job, but this proportion drops to 59 per cent for skilled operators and to 27 per cent for unskilled operators. Is "job stability" a function of the firms' characteristics? The testing out of this hypothesis gives different results for different occupations. Clearly, there is no, or little, correlation between firms' characteristics and stability for managers, book-keepers, secretaries (these are standardized permanent jobs); there is a strong association between size of firms and job stability for foremen; there is a strong association between size, capital, integration and market of firms on the one hand and job stability for technicians on the other. Skilled and unskilled operators have a status (permanent or not) depending clearly on the firms' characteristics (capital, production process, booking service, maintenance system, bank relationship, market conditions, percentage of visitors).

2. *Average working hours per month*

An analysis of data on the average number of working hours by occupation and by sector suggests the following comments.

The average number of working hours per month varies significantly by sector. Textile employees work on average 10 hours more than their colleagues in the other three sectors. The range varies significantly between sectors. Standard deviations are very high for Hotels, showing large differences between firms, but are very low in Construction—except for unskilled workers—showing a more normalized system of work.

The analysis by occupation suggests different "hierarchies" in the conditions of work in different sectors, but usually the "bottom position", i.e., the unskilled worker, has the largest number of working hours per month and the largest dispersion (because of the heterogeneity of this occupation).

Are the average number of working hours per month related to firms' characteristics? Only in the case of technicians, secretaries and to a lesser extent book-keepers and foremen, did we find significant correlation coefficients. This result, which is apparently paradoxical, can be explained by the fact that firms' characteristics affect duration of work through "overtime" and not through the standard number of working hours by occupation. Probably also the data collected lacked accuracy.

3. Unionization of workers

This indicator—percentage of workers unionized—is very difficult to interpret, as in the first place it is due to "historical" reasons as well as to the degree of organization of workers' associations. For example: workers in Jakarta tend to be more easily unionized than workers in Padang: all workers in Construction and almost all workers in Trade are not unionized. Secondly, "unionization" is itself a characteristic of the firm in a sense: in some firms when workers enter they are immediately unionized, in others it is not easy for a worker to keep his job once he is unionized; this explains the U-shape of the curve of percentage of unionized workers. There are very few cases where you have a percentage of unionization above 10 and below 90; either the firm is a "0-10 per cent" type or a "90-100 per cent" type. Another striking result is that contrary to western economies, workers at the bottom of the scale are not more unionized than workers at the top: unionization for managers is equivalent to or higher than that for operators. Another interesting result is that "middle categories" of workers, i.e., technicians, book-keepers, secretaries, are more unionized than other workers. These findings should be considered as no more than an illustration, because of the small number of observations.

4. Type of contract

For each occupation employers were asked the type of contract currently in use, i.e. "piecework", "fixed rate", "with scale". From the statistical distribution of the replies the following comments can be inferred.

The higher the hierarchical position, the larger the proportion of workers having contracts with a salary scale; the lower the position, the higher the proportion paid on piecework or fixed rates. That is to say, "good jobs"

which are more stable are also offered better contractual conditions, i.e., with a salary scale; "bad jobs" which are not permanent usually receive bad contractual arrangements, i.e., "fixed rate".

There is a striking difference between sectors: book-keepers, secretaries and foremen occupy relatively higher positions in Textiles (i.e. better treatment) than in Hotels.

Finally, "type of contract" is strongly associated with firms' characteristics. Cross-correlations by occupation show significant results with size, status, autonomy, capital, production process, equipment and modernity for Textiles; and with size, type of product, equipment, book-keeping, booking service, NCR, maintenance system for Hotels. Hence, contract systems are closely related to "social, technical and position dimensions" of firms.

5. *Promotion system*

The system of promotion is another illustration of the results of interaction between supply and demand of labour and indicates the differential treatment by employers of workers in different hierarchical positions. Occupations with no system of promotion "normally" belong to the bottom of the hierarchy—57 per cent and 67 per cent of skilled and unskilled operators have contracts with no promotion possibility; a small proportion of workers in occupations of a more stable and standardized type—book-keepers and secretaries—will have contracts with no promotion possibility (23.5 and 32.5 per cent); contracts for occupations at the top of the hierarchy are in an ambiguous situation (managers, foremen) as either they reach the maximum (it is difficult for a manager or for a foreman to be upgraded without changing category) and/or they normally expect better treatment: 34.5 per cent of foremen and 39.5 per cent of managers hold contracts with "no promotion".

On the other hand, a significant proportion of employers declare that they give promotion according to performance and a smaller proportion declare that they give promotion according to length of service and performance. (It is not surprising to see that no employer gives promotion according to length of service: we are far from the highly-structured "labour relations" in the public sector—not included in the sample.) In the end, even for those who receive better treatment—top of the hierarchy—promotion depends essentially on the extent to which workers "conform to rules" and are judged as productive by their supervisors. This confirms the findings given in Chapter II.

6. *Salary and income*

Table 16 gave average salaries and income (which includes overtime payments and various allowances) by occupation for all sectors. A number of comments are worth making.

There is a parallelism between job hierarchies, salaries and income by occupation. Broadly speaking the range is 1 to 5 between bottom and top positions.

In terms of salaries, there seem to be few differences between supervisors, secretaries and technicians—all earning twice as much as unskilled operators. Book-keepers come in second position after managers.

Salaries represent about two-thirds of total income. Hence, allowances in the form of bonuses, medical treatment, housing, transport, tips, etc. represent an important source of income for workers in all categories of occupations. Yet by adding allowances to salaries the differences between occupations tend to increase and not decrease (except for secretaries and skilled operators).

Obviously the range of salaries varies considerably by sector, the figures above relating to total averages. For example, in Textiles the salary ratio for managers is 885, in Hotels it is 318, in Construction 630 and in Trade (much narrower) 263. The slight difference between skilled and unskilled operators in Hotels is due to the definition adopted in this sector, i.e. "skilled operator" is just above the bottom category: room attendants, who are usually treated as unskilled workers. Naturally, the case is different in the other three sectors.

In order to have a preliminary indication on the extent to which incomes are related to firms' characteristics, we cross-correlated income with firms' characteristics by occupations. For all occupations the level of income shows a strong association with "system of maintenance", "booking service", "bank relationship", "market" and "percentage of visitors"; but different additional job characteristics affect the level of income for various occupations. For example, "capital" and "production process" affect the income of skilled and unskilled operators; "status" affects the income of technicians, secretaries and book-keepers. These preliminary findings led us to develop a more systematic model for analyzing the factors regarding variations of income, which we will cover in the last section of this chapter.

D. The combined effects of supply and demand on income inequalities: hierarchies and segmentation

To the questions who is recruited? how? for which occupation and under what conditions? we have tried to find some answers which can be summarized around two central notions.

(a). The hierarchy of occupations depends undoubtedly on individual characteristics of workers and on the function performed, but also is determined by conditions of access which themselves relate to firms' characteristics (see Chapter II).

(b). This hierarchy is the result of interaction between employers and workers and becomes a key factor in the segmentation and stratification of the labour market.

Admittedly segmentation theories require a more comprehensive basis for testing, as they suggest amongst other things the 'weight' of historical work

and relations between capital and labour in shaping the present conditions of the labour market. None the less, and without being able to test all the elements of these theories—particularly the lack of mobility between occupations—for the seven categories of occupations, which can be grouped as “management”, “pivotal occupations” (supervisors), “operators” and “employees” (secretaries, book-keepers, technicians), we have shown (1) the contrasts in recruitment criteria, ascriptive, cognitive, and attitudinal traits imputed to each occupation; (2) the parallelism between level of education, of salary, of income and hierarchical positions of occupations — ranked in relation to one another; and (3) the different “workers’ profiles” (sex, age, education) and corresponding profiles of occupations as measured by indicators of conditions of work (stability, mode of remuneration, working hours, etc.).

What remains to be done is to determine what, in the dispersion of incomes, can be explained by workers’ characteristics, firms’ characteristics and conditions of work, in order to interpret the effects of the interaction between employers and workers and between supply and demand of labour.

With this purpose in view, we estimated a set of regression equations (simple and multiple) using incomes as dependent variables and individual firms’ characteristics and working hours as independent variables. While the equations are not statistically significant for all occupations, the results as summarized in Table 17 suggest the following comments:

1. Simple linear regressions of income with education give low correlation for secretaries, skilled operators and supervisors, medium for managers and high for technicians, book-keepers and unskilled operators. This is easy to understand, except for unskilled operators. To some extent similar patterns hold true for training. Working hours make a very negligible contribution towards explaining variances, except for technicians (as we have seen earlier on, working hours are strongly associated with firms’ characteristics for technicians).
2. Canonical regressions with firms’ characteristics (autonomy, age, size and production process), working hours, education and training¹ show that with four to six variables it is possible to explain between 38 and 60 per cent of the variance of income according to the occupation being considered. This is a rather significant result in view of the dispersion of the variables and the unavoidably approximate nature of data on income.
3. A glance at the contribution made by the various ‘blocks’—i.e., firms’ characteristics, working hours, education and training—shows that (i) the contribution made by education and training (individual characteristics) as a determinant of income varies considerably depending on the occupation:

1. The list of variables which enter the equations varies according to the occupation considered, in order to avoid multi-collinearity.

TABLE 17. Income regressions in relation to firms' characteristics, working hours, education and training, by occupation (N = 75-80)

	Firms' characteristics							F
	Autonomy	Age	Size	Production process	Working hours	Education	Training	
Managers	R ² (β)	0.28 (0.066)	(0.220)	(0.381)	0.08 (0.212)	0.21 (0.450)		0.51
Technicians	R ² (β)	0.03 (-0.010)	(0.113)			0.37 (0.584)	0.11 (0.132)	1.5
Book-keepers	R ² (β)	0.12 (0.019)	(0.134)	(0.145)	() (-0.200)	0.37 (0.690)		4.8
Secretaries	R ² (β)	0.32 (-0.108)	(0.433)	(-0.335)		0.08 (0.137)		9.9
Supervisors	R ² (β)	0.31 (0.016)	(0.624)		0.05 (0.318)	0.04 (0.208)		12.6
Skilled operators	R ² (β)	0.05 (-0.105)	(0.144)		0.19 (-0.325)	0.09 (0.128)	0.18 (0.528)	2.1
Unskilled operators	R ² (β)	0.03 (-0.069)	(-0.183)			0.58 (0.779)		2.1

the percentages are 21 per cent for managers, 48 per cent for technicians, 37 per cent for book-keepers, 8 per cent for secretaries, 4 per cent for supervisors, 27 per cent for skilled operators and 58 per cent for unskilled operators; (ii) the contribution made by working hours is small or negligible for all occupations, except for skilled operators; (iii) the contribution made by firms' characteristics is small for occupations at the bottom of the hierarchy, i.e. technicians, skilled operators and unskilled operators; medium for book-keepers; high for managers, supervisors and secretaries.

Thus the supply/demand adjustments cut across the job hierarchy significantly and contribute directly to the stratification of the labour market. Jobs at the top end of the scale—managers—depend both on firms' characteristics, individual characteristics (education) and conditions of work (working hours). This is also true for book-keepers, who come after managers in the hierarchy. Jobs at the bottom end of the scale—unskilled operators—are such that their income depends very little on firms' characteristics and mostly on education. This is also true of occupations belonging to the lower part of the hierarchy (in our list technicians and skilled operators). The case of secretaries and supervisors is just the opposite: income variance can be explained much more by firms' characteristics than by education and training.

Therefore the conclusions to be drawn from these preliminary findings can be summarized as follows: the occupations, by reason of their level of remuneration and the factors which affect this, clearly belong to different worlds and are governed by different rules. Some, as it were, 'identify' the worker with the firm (top and middle-level)—their income is mainly explained by the company's characteristics. Others are remunerated according to the "market" and with less relation to the firm (middle- and low-level workers).

From the point of view of educational planning, it is particularly interesting to note (i) that education is recognized in terms of 'pay' to a far greater extent at the top end of the scale than it is for lower-level jobs (except in the case of unskilled operators where there is a pronounced distinction between illiterate and literate, or uneducated and others); (ii) that special training is particularly well rewarded for technicians and skilled operators.

Some conclusions

What conclusions can be drawn from this survey of employers? Let us organize the presentation of the conclusions under two main headings: (A) methodologies and (B) implications for educational policies.

A. Methodologies

The experience gained from the actual implementation of the four employers' surveys has led us to the following conclusions:

1. *The content of the questionnaire*: perhaps a number of simplifications could be introduced without having too great an effect on the findings (dealing with firms' characteristics, employment structures, relationships between employers and educational institutions); on the other hand, it would certainly enrich the validity of the conclusions to a significant extent if an employees' questionnaire were added to the employers' questionnaire (even if it was limited to a collection of personal data records).
2. *The carrying out of the survey*: the Indonesian team had to overcome a number of practical difficulties in obtaining interviews from the firms (generally with managers or the head of personnel). Indeed a great deal of energy went into convincing the firms surveyed of the importance of the study and of the "confidential" and "neutral" nature of the work. The reluctance by employers to co-operate in the survey can be explained by the lack of precedents of a survey of this kind in Indonesia, the fear that the data would be used against their firm and the need (for rather busy people) to spend a great deal of time and energy in completing the questionnaire. In case any follow-up is contemplated to this pilot study, a careful assessment of these difficulties should be made and perhaps different approaches envisaged for the data collection.
3. *The data*: the limited number of firms covered and the small size of the team involved has led (with some minor exceptions) to obtaining a very reliable data collection system. In case such an exercise is to be expanded, it would be necessary to plan for a period of careful training and preparation of the team of surveyors

B. Implications for educational policies

While the size of the sample is very small and limited to a few sectors and areas in Indonesia, it is still legitimate on the basis of the study to draw some lessons and infer a few conclusions for the consideration of educational policy makers.

Firstly, the study shows that firms' characteristics affect significantly their use of human resources, i.e., different categories of occupations will be used in different ways according to the technological, social and position dimensions of the undertaking in the world of work. Hence, any assessment of manpower needs by an economy should start with (a) some data on the breakdown of firms according to certain indicators on firms' characteristics and (b) some assumptions on the relationships between various types of firms and their use of human resources.

Secondly, recruitment for some job categories takes place mainly by promotion within the firm (internal recruitment); this is especially the case for foremen and managers. Others are filled mainly through external recruitment; this is so for example for skilled and unskilled operators. For others—technicians, book-keepers, secretaries—the pattern will differ according to the firm involved. This finding is important when forecasts for manpower demand are made for each occupational category.

Thirdly, when recruiting (through promotion or the external market), firms use a number of criteria (ascriptive and cognitive) for selecting applicants to jobs. In this respect, it is important to note that "education" and "special training" are not used in the same way for recruitment or promotion, and for all occupations. In the case of recruitment, they seem to play a very minor role in identifying the "right" applicant for the job of "technician" and "skilled operator". This finding is surprising and has important implications if proved generally valid, since it would mean, for example, that expanding the education of the young would not help a great deal towards increasing employment opportunities for these job categories; if access to these occupations is related more to ascriptive than to cognitive criteria, it is hard to expect an improvement of the labour market through a change in the cognitive characteristics of the young.

Fourthly, the analysis of the average level of education (expressed in years) and training (expressed in months) shows that there is no simple relationship between occupation and education, although the higher the hierarchical position of the job, the longer the education and training. Firms' characteristics influence the educational and training profile of its workers; and this profile has been changing over time: between 1970 and 1977, for all occupations except managers, the average number of years of education has increased. Hence the "education-training" specifications of various occupations change according to the evolution of the educational level of the population. (For the same occupation, even in the same year, requirements in Jakarta are higher than requirements in Padang, as the average educational level of the popula-

tion differs between the two cities). If this is so, the argument for planning education in the light of manpower needs becomes somewhat questionable. In the case of training (vocational), no clear-cut pattern emerges, except perhaps that (i) the actual distribution of workers by length of training shows that for the majority of firms and for all occupations, employers declare "no training" for their workers; (ii) although some increase in vocational training requirements seems to have taken place between 1970 and 1977, the proportion of employers who declare that some vocational training is needed remains very small for all occupations. The very least that one can conclude from these findings is that there is a serious problem with regard to vocational training which deserves some further investigation.

Finally—and this does not exhaust the results of the study—it is very striking to note that when analyzing the determinants of income, education plays a major role for unskilled operators (this is an important argument for literacy and basic education), for technicians, book-keepers and to a lesser extent for managers. In the case of skilled operators, the contribution of "special training" towards explaining income is twice as important as that of education. In the case of "supervisors", "secretaries" and "skilled operators", education plays a negligible role in the determination of income.

Appendix: definitions of variables

<i>Variable</i>	<i>Nature</i>	<i>Details</i>
Status	Discrete	<ol style="list-style-type: none"> 1. Partnership 2. Limited company 3. Individual or family firm 4. Public firm or state enterprise
Autonomy	Discrete	<ol style="list-style-type: none"> 1. Independent national (public) 2. Independent national (private) 3. Subsidiary (public) 4. Subsidiary (private) 5. Main establishment (public) 6. Main establishment (private) 7. Establishment belonging to a multinational group (public) 8. Establishment belonging to a multinational group (private) 9. Joint venture
Age	Discrete	<ol style="list-style-type: none"> 1. Before 1966 2. Between 1966 and 1970 3. After 1970
Production process	Discrete	<ol style="list-style-type: none"> 1. Continuous 2. Series 3. Piecework
Size	Discrete	<ol style="list-style-type: none"> 1. Less than 5 2. 5-10 3. 10-20 4. 20-50 5. 50-200 6. More than 200
Working hours per month	Continuous	Varies between 144 and 320
Education requirement	Continuous	"Averages" vary between 0.5 and 13 years
Training requirement	Continuous	"Averages" vary between 0 and 5.7 months

Education and career patterns in the public service sector in Kenya

Audrey Chapman Smock

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Introduction

This study is an initial effort to detail the relationship between formal education, professional training, and career patterns in Kenya's public service during the period from independence in December 1963 through 1977. Two aspects of this relationship will be examined: differentials in recruitment and promotion patterns of males and females with similar amounts of formal education entering a particular subsector of the labour force during the same period, and changes in employment prospects of women and men with various types of educational credentials over time as the educational system has expanded. This paper will deal with two parts of the public sector, the teaching service and the civil (central government) service, with particular reference to the secretarial, clerical, and middle-level management (executive, accountancy, and personnel) grades. In 1975 the educational sector employed a total of 116,211 workers, most of them teachers, which constituted 14 per cent of all wage employment in the modern sector in that year. Central government service, excluding public corporations and parastatal bodies, provided employment for 111,531 persons (CBS, unpub: B).

In the post-independence period Kenya, like most developing societies, has been characterized by rapid educational growth juxtaposed with limited employment generation. The high priority accorded to educational expansion has more than doubled primary-school enrolment and resulted in an eight-fold increase in secondary enrolment. In 1964 primary-school enrolment stood at 1,014,719 and secondary and technical schools had a total enrolment of 35,921 (MOE, 1965: 19). By 1976 the educational system was servicing 2,894,617 primary pupils and 280,388 secondary-school students (CBS, 1977). The proportion of enrolment of the eligible primary-school age-cohort went from 37 per cent in 1962 (Sheffield, 1971: 15) to 87 per cent in 1976 (CBS, 1977: 2). As an indication of the changing output of the educational system, numbers of candidates sitting annually for the Cambridge School Certificate or its successor, the East African School Certificate Examination, both of which are taken after four years of secondary school and are equivalent to the British "Ordinary" level, rose from 6,200 in 1964 (MOE, 1965: 11) to some 48,000 in 1975, while the students registering for the Higher School Certifi-

cate or East African Advanced Certificate Examinations after six years of secondary education, which are equivalent to the British "Advanced" level, increased from 447 in 1964 (MOE, 1965: 11) to 7,000 in 1975 (MOE, 1975: 55). The establishment of the University of Nairobi as an autonomous university in 1970 facilitated the growth of output from higher education as well. By 1977 the University of Nairobi awarded degrees and diplomas to 1,891 graduates from the main campus and its constituent Kenyatta University College (University calls for separate fund allocation, 1977: 5). Although accurate figures are not available on the number of university graduates trained outside of East Africa, it seems likely that several hundred of the 3,000 or more Kenyans studying overseas return each year with graduate qualifications.

Employment opportunities have grown more modestly during this period. Despite a sustained rate of economic growth, exceeding six per cent for most years, generation of employment has proceeded slowly, especially in the modern sector, due to the utilization of capital-intensive technology. Total enumerated wage employment in the modern sector increased from 581,300 in 1962 (Economics and Statistics Division, 1963: 2) to 819,056 in 1975 (CBS, unpub. B). Efforts to Kenyanize the public sector absorbed much of the secondary-school and university output in the years immediately following independence, but by 1969 the public sector was 95 per cent localized (Ndegwa, 1971: 29). Unemployment among secondary-school leavers became an officially recognized problem by 1970 (Select Committee on Unemployment, 1970: 8). Within five years university graduates, particularly those with arts degrees, also were reported to have difficulties in finding jobs.

Data from the 1972 manpower survey indicates that the annual increase in middle- and high-level positions requiring secondary or university education in recent years has been in the range of 6,000 jobs. If replacement of non-citizens is taken into account and if it is assumed that this process will be completed by 1980, this would generate an additional 3,000 positions annually. Of these annual employment openings, it is calculated that 6,500 jobs are for secondary-school leavers and 2,500 for those with a tertiary-level education (Wachira, 1977). According to these figures, only a very small proportion of primary- and secondary-educated job-seekers can hope to find wage employment. Moreover, the shortfall between the number of school-leavers seeking employment in the wage sector and the number of openings will increase in future years. Another attempt to qualify employment prospects for school-leavers estimates that of the 190,000 school-leavers in 1975 about 39,000 (i.e. about one in five) were absorbed into wage employment but that the shortage of wage jobs of some 150,000 may increase three-fold by 1985 (Edgren, 1976). Although agriculture and self-employment could provide some school-leavers with a means of earning a livelihood, their strong preferences for wage jobs are likely to raise open unemployment significantly.

This basic tension between rapid educational growth and limited employment generation has created a situation conducive to credential escalation and

declining prospects of school-leavers over time, but there have probably been differences in subsectors as well as between males and females. Kenya's labour market, like that of most countries, has been extremely segmented, with conditions of supply and demand diverging among subsectors. For example, the expansion of the educational system has brought about a concomitant growth of the teaching profession, whereas the civil service has expanded more slowly and the increase in employment openings in most branches of the private sector also has been limited. The impetus for Kenyanization also has been stronger in the public than in the private sector. Fragmentation of the labour market even characterizes the public sector itself. The civil service, teaching service, public corporations, and parastatal bodies set recruitment criteria and wage policies independently of one another. Within the civil service the Directorate of Personnel Management centrally establishes conditions of service, but the policy to deal separately with each of the occupational groupings has given rise to considerable variation, with the upgrading of entrance qualifications coming in some subsectors years ahead of others. Until the Ndegwa Commission Report recommended in 1971 and the Government adopted a single salary structure to make salary administration an integral part of civil service management and at the same time reorganized the civil service into 15 job groups based on task analysis and specifications required for entry, there was little co-ordination among the occupational groupings. In the period since 1971 there has been greater uniformity in salary levels and increments. However, changes in minimum educational qualifications for recruitment and advancement continue to be considered autonomously for each occupational grouping.

Generally the civil service and the teaching service have been at a competitive disadvantage with many other employers in terms of salary scales and benefits. The private sector, not the public sector, has tended to be the price-setter in wages and salaries. Employees in all branches of public service, like other workers in the modern sector, have enjoyed an average income far in excess of all but the most successful farmers or self-employed businessmen, but average incomes usually have been lower than in the non-agricultural private sector (World Bank, 1975: 22). Within the public sector, public corporations and parastatal bodies frequently offer better conditions of service, particularly for senior and skilled personnel, than either the teaching service or the civil service. Until recently salary levels within the teaching service were significantly lower than in other branches of the public sector, and in contrast with policy in other branches of the public sector, housing was provided only under special circumstances. Increases in remuneration and a reversal of the housing policy have reduced differentials between the teaching and civil services.

The general policy to link educational qualifications to salary grades has acted as another constraint, along with competitive disadvantages in recruitment, on improving educational qualifications within the civil service and teaching service. Efforts to raise minimum credentials for entry, to provide

upgrading through in-service training, or to increase the ratio of more-skilled to less-skilled personnel in particular grades have had significant implications for the total cost of wages. According to 1977 salary scales, for example, an entrant to the civil service with the East African School Certificate begins at an annual salary of £399, whereas a new recruit who has completed two more years of schooling and has a form VI education starts at £471 and someone with Form VI and the requisite passes in the East African Advanced Certificate earns £510 (Personnel Circular No. 6 of 1977). In establishing minimum educational credentials for recruitment to specific grades, the Directorate of Personnel Management and the Ministry of Education, whose budgets are less elastic than those in the private sector, have had to weigh the financial costs as well as the availability of candidates.

The tension between rapid educational growth and limited employment generation may not have had the same impact on males and females because of significant sex differences in educational opportunity and employment policies. Although females have begun to approach parity with males in primary educational enrolment, the structure of the educational system, both in the number of available places at the post-primary stages and in the type of education offered, disadvantages females. Between 1963 and 1973 female enrolment, as a percentage of total enrolment in secondary schools, did not increase beyond 33 per cent of Forms I-IV and 24 per cent of Forms V and VI. Moreover, the distribution of places has provided boys with more than three times the chance to gain entrance to a Government-maintained secondary school, and usually only such a school can offer the courses and facilities that enable students to perform well on examinations and gain places in higher education, career-training programmes, and employment. This imbalance in the number of places in maintained institutions has meant that the growth in female secondary enrolments during the post-independence period disproportionately has come in unaided *Harambee* (community self-help) institutions. By 1973 slightly more than half of all Kenyan female secondary students of African descent were attending unaided schools, as contrasted with slightly less than two-fifths of males, with obvious implications, in light of the inferior quality of these schools for female prospects for higher education. The relative lack of science programmes and facilities for females in secondary schools has imposed an additional constraint. At the upper-secondary level, in 1976, there were four and one-half times as many science streams for boys as for girls, and females constituted only 17 per cent of enrolments in science streams in aided schools and 14 per cent in unaided schools. Women also have been legally excluded from Government technical and vocational secondary schools, ostensibly because boarding facilities for females are non-existent. The institution of new selection criteria and course requirements at the University of Nairobi, emphasizing proficiency in science and maths, has reduced women's proportion of university admissions by half since 1965/66 to less than 10 per cent of the total enrolment in 1975/76. Many career-training programmes similarly have discriminated against female

admissions. Government career-training booklets and application forms have encouraged female applications only for teaching, nursing, secretarial work, home economics, and catering, excluding women from agricultural, scientific, and technical training courses (Smock, 1977).

Women consistently have been under-represented in the modern sector. Their share of the employed African wage-labour force declined from 17.5 per cent in 1964 to 11.5 in 1973 (CBS, 1974: 257). Total employment of all females, citizens and non-citizens, in 1975 constituted only 15.6 per cent of the wage-labour force (CBS, 1976: 44). In 1972 women held only 16 per cent of all middle- and high-level positions in the modern sector, and many of the females so classified, particularly at higher levels, were non-citizens (CBS, 1974: 257). As these figures suggest, women suffer from higher rates of urban unemployment than men. An ILO team estimated female unemployment to be 10 to 17 per cent for female household heads and 23 to 27 per cent for non-heads in 1977, more than double the incidence of male unemployment (ILO, 1972: 57).

Analysis of women's distribution in the wage-employment sector reveals a heritage of considerable occupational segregation in Kenya: women are clustered in a few occupational groups, several of which are sex-stereotyped as feminine, and are significantly under-represented in the managerial, professional, and supervisory positions that bring decision-making authority, high salary scales, and prestige. According to the figures in Table 1, women predominate in only one of the major occupational groups, secretarial work, and are consistently next well-represented among teachers. Women are under-represented in Kenya in many of the occupational categories that are

TABLE 1. Women's percentage of major occupational groups, 1968, 1972, and 1975.

	1968	1972	1975
	%	%	%
Directors and top administrators	6	4	3
Salaried directors	—	14	34
Professionals	15	13	12
Executive and managerial	7	6	8
Technicians and workshop advisory personnel	10	8	11
Teachers	20	27	34
Secretaries, stenographers and typists	72	86	91
Clerks, book-keepers, cashiers and book-keeping clerks	6	9	10
Shop assistants, technical sales representatives, auctioneers and salesmen	10	13	12
Skilled and semi-skilled workers not included	4	7	5
Unskilled	11	11	13

SOURCE Central Bureau of Statistics, *Employment and earnings in the modern sector 1968-70*, p. 77, *Employment and earnings in the modern sector 1972-73*, p. 81; labour enumeration for 1975

considered appropriate for females elsewhere, for example, clerical and sales-work, as well as in many in which women frequently are excluded. The recent rise among female salaried directors is difficult to explain and may reflect the appointment of women family members in family-owned firms.

During the colonial period the public sector was not a trend-setter in the employment of women, particularly of African origin. Prior to independence many of the women in the public sector were Europeans and Asians serving on temporary terms of service in secretarial and clerical positions. The colonial administration did not attempt to establish an ongoing secretarial service whose members were encouraged to make a career commitment. Existing rules required a female officer of local origin to retire from or resign a pensionable appointment upon marriage and also prohibited the appointment of married women on pensionable terms. Exceptions were sometimes made in the fields of nursing and teaching, in which there was a shortage of fully qualified women of local origin and for which the administration wanted to encourage the employment of local women, that made it possible for a woman to continue after marriage after being transferred to contract terms (Pratt, 1963: 98-99). In 1962 the rate of employment of females in the public sector, 7 per cent, was only half that in the private sector, and a higher proportion of the total number of women was accounted for by non-citizens (Economics and Statistics Division, 1963: Table 11).

Since independence the public service has endorsed the principle of equal pay for equal work and has applied the same criteria in the recruitment of women and men to specific grades, but sometimes has been reluctant to accord married women the same conditions of service as married men. Initially the policy of discriminating against married women was reversed as part of the changes recommended by the Pratt Commission in 1963. However, the personnel circular, which in 1968 implemented the suggestions of the Millar-Craig Commission, returned to the pre-independence policy of restricting married women to contract terms or temporary terms of service. The Ndegwa Commission Report of 1971 objected to the unfair treatment of married women and proposed that all married female officers, except those in the subordinate service who received a service gratuity, should be eligible for all benefits available to male officers at comparable levels (Ndegwa, 1971: 262). A cursory analysis of government files indicates that many married women are still employed on contract terms of service.

The employment of women in the public service has increased gradually since independence. By 1975 women comprised 16 per cent of all employees of the central government and 21 per cent of other governmental agencies and public corporations, as compared with 15 per cent of the wage-force in the private sector (CBS, unpub. B). Generally women have been best represented in the teaching service and least well represented in some of the public corporations and parastatal bodies, such as the railways and electric light and power. As Table 2 shows, women's occupational distribution is much more diverse in the public than in the private sector. Whereas 84 per cent of female

TABLE 2. Sex distribution of wage-employment of Kenyan citizens by occupational group and sector, 1976.

Occupation	Public sector		Private sector	
	Number of males	Number of females	Number of males	Number of females
Casual employees	25 937	3 336	62 965	26 176
Unskilled workers	120 932	11 574	232 777	35 518
Skilled manual workers	31 376	5 153	49 632	1 966
Technicians and supervisors	6 180	255	5 758	325
Shop assistants, sales personnel	253	40	5 114	38
Clerical workers	26 262	2 480	18 504	2 078
Secretarial workers	450	5 108	730	4 771
Middle level executives	6 944	641	7 201	473
General managers	885	14	2 293	88
Teachers	63 464	32 123	2 157	654
Architects, engineers and surveyors	894	5	488	9
Medical, dental, veterinary	1 646	1 523	117	144
Agronomists	330	21	37	0
Statisticians and mathematicians	126	6	50	16
Other scientists	341	28	47	3
Lawyers and jurists	139	9	39	7
Accountants	248	7	374	18
Economists	67	1	8	0
Other professions	1 789	109	1 754	226
Total	288 213	62 423	390 045	73 140

SOURCE Central Bureau of Statistics, labour enumeration 1976

wage-employment in the private sector in 1976 was concentrated in the casual employees and unskilled worker groupings, only 24 per cent of the females in the public sector were similarly employed. In contrast with the situation in the private sector, the largest number of women in the public sector were teachers rather than labourers.

If it is assumed that employers set minimum educational requirements for positions with some reference to the availability of personnel, the existence of a surplus labour market, as noted previously, should be conducive to the raising of academic and professional training qualifications for jobs over time. Hypothetically this credential escalation should characterize both the female- and male-dominated occupational groupings. Although females comprise a smaller proportion of secondary-school and university output than males, they also tend to be recruited for a more limited range of employment. The fields in which women and men compete for similar jobs and therefore are characterized by a large potential pool of manpower could be the most amenable to employers demanding more schooling, better examination scores, and professional training as conditions for recruitment and advancement.

There have, however, been relatively few efforts to document the changing relationship between formal education, professional training, and career patterns in Kenya. The development of the educational system, patterns of access, the examination system, educational aspirations, and pedagogical factors affecting the process of education have all been subjects of good studies, but little work has been done on the effects of education. This bias toward the inputs rather than the outputs of education reflects international trends in educational research. It also has resulted from the lack of available national statistics permitting analysis of the links between education and economic role: census questionnaires have failed to include items about employment and labour-force surveys generally have not asked questions about educational background.

There have been three major efforts to relate educational variables to employment in the formal sector. The first of these is the tracer study of secondary-school graduates from the classes of 1965 and 1969 conducted by the Institute for Development Studies of the University of Nairobi (Kinyanjui, 1972). There are several major limitations in this project: employment conditions have changed radically since 1969/70 when the respondents were traced; the tracing reveals initial employment but not long-term career patterns; and the female sample, which was drawn from only four schools, is not considered representative by the staff members involved in the selection. Other research has been done computing the private and social returns for particular levels of education in Kenya, based on a sample of 5,000 employees in three urban areas taken in 1968 (Thias and Carnoy, 1972). The data analysis utilizes sophisticated techniques, including multiple regressions, but the subject of the returns on education is assessed almost completely in terms of the salary and income levels accruing from education and not in the wider perspective of career patterns. As in the Institute for Development Study project, the number of African females included in the sample was relatively small and most of the analysis was done only for males. It is also quite likely that the development of a surplus-labour market in the ten years following the original data collection has reduced the returns on education. The third contained in the Central Bureau of Statistics (Government of Kenya) 1972 middle- and high-level manpower survey. This survey collected data on formal educational qualifications and professional training credentials for all employees in the formal sector in the occupational groups that the Central Bureau of Statistics assumed would require post-secondary training. Unfortunately the data analysis was never completed and the results, with the exception of a few tables, were never published.

This study will focus on specific occupational groupings within the public sector rather than on individuals, and seek to trace changes in educational specifications for recruitment, promotion, and remuneration. The data will be drawn primarily from data files, documents, and publications of the Central Bureau of Statistics. In conjunction with the Ministry of Education, the

Central Bureau of Statistics conducts an annual census of schools in order to collect basic statistics on the composition of the teaching profession as well as school enrolment and equipment in schools. To accomplish this objective every school in all provinces is requested to complete a questionnaire. The questionnaire circulated among the primary schools secures data on student enrolments, equipment, and teachers' qualifications. Two questionnaires are circulated among secondary schools. One form is completed by the head of the school on student distribution and equipment. The second form is filled by the teachers individually detailing their qualifications and teaching experience. Section I on education and career patterns in the teaching profession will utilize data from this annual teachers' census supplemented by other data from Ministry of Education files. The two major sources for Section II on the civil service will be the results of the annual enumeration of employment and wages in the formal sector undertaken by the Central Bureau of Statistics and personnel circulars issued by the Directorate of Personnel Management setting forth conditions of service in the civil service, including minimum educational qualifications for recruitment and promotion. The Central Bureau of Statistics' survey of employees and their earnings in the modern sector covers establishments both in rural and urban areas and also includes some urban establishments in the informal sector run by self-employed individuals. As in the school and teacher census, questionnaires are sent to each establishment and returns are based on the employers' presentation of information, which may or may not accurately reflect the actual situation. Presumably there should be less motivation for false reporting in the public than in the private sector.

I. The teaching profession

Teachers comprise the largest occupational grouping of educated manpower in the public sector. As was shown in Table 2, the public sector employed 95,587 Kenyan citizens as teachers in 1976, 63,464 males and 32,123 females, who together accounted for 27 per cent of the employment of Kenyan nationals in the public sector. The only occupational group with more citizens was the unskilled workers, most of whom can be presumed to be little-educated. Of the members of the teaching profession in 1975, 96 per cent were employed in the public sector and only 4 per cent by private institutions (CBS, unpub. B). The Teachers' Service Commission serves as the employer of teachers in all government-aided primary and secondary schools and teacher-training colleges on behalf of the Ministry of Education. At the present time virtually all of Kenya's primary schools, one-third of the secondary schools, and all but one of the teacher-training colleges are Government-aided or maintained, and the public sector enrolls approximately 2,850,000 primary-school pupils, 118,000 secondary-school students, and 9,000 teacher candidates in pre-service training, in comparison with a total of less than 200,000 students in unaided private, church, and *Harambee* (self-help) institutions at these levels (CBS, 1977).

Trainees from Government pre-service courses at teacher-training colleges and university education programmes are automatically employed in the public sector after completing their training. In the case of untrained teachers, if the district education officer certifies that a primary-school vacancy exists and a particular candidate meets the minimum requirements, the Teachers' Service Commission registers and employs him or her. Private and *Harambee* schools recruit their own staffs separately from the Teachers' Service Commission and frequently must rely predominantly on untrained teachers or non-citizens who are willing to accept local terms of service. Trained teachers are bonded for three to five years to teach in the public sector and usually prefer the greater job security and better conditions of service in Government schools.

The teaching profession provides an interesting and significant case study of the relationship between formal education, professional training, and career

patterns for a variety of reasons. As mentioned above, the teaching profession constitutes the largest pool of educated manpower in the public sector. The high priority assigned to education by the Government has brought about the rapid expansion of the educational system since independence and a commensurate development of the teaching profession. The numbers of primary school teachers increased from 27,828 in 1964 to 89,074 in 1976, and the size of the secondary teaching force went from 1,980 in 1964 to 11,438 in 1976 (MOE, 1965; CBS, 1977). Consequently employment opportunities for school-leavers have grown more rapidly in the teaching profession than in any other part of the private or public sector. The teaching profession has also maintained a better sex-balance than any other occupational group in the public sector employing educated manpower, virtually all of which are either male- or female-dominated. Recent research suggests, as well, that teacher characteristics, such as the nature of academic and professional training, affect teachers' performance and in turn the achievement of students in less-developed societies (Heyneman, 1976; Carnoy, 1971; Beebout, 1972; Alexander and Simons, 1975).

Prior to independence the teaching profession, like all aspects of the educational system in Kenya, was racially stratified and distinctions existed in recruitment, training and grading of teachers. In 1962 the teaching profession was composed of 21,116 teachers for African schools, 20,685 of whom were assigned to primary schools and 431 to secondary schools; 2,087 Asian teachers for Asian schools; 614 teachers of European origin for European schools; and 141 teachers for Arab institutions. There were 36 aided teacher-training colleges, 25 of which produced teachers for African primary schools, most of whom were primary-school graduates given two years of teacher training. In contrast with the staff qualifications of teachers in African primary schools, the vast majority of whom had little more than a primary schooling, European and Asian primary-school teachers tended to have either university or secondary-level education (MOE, 1963). In 1964 schools were integrated and a unified teaching profession created.

The Ministry of Education has acknowledged that credentials of teachers, both their pre-service educational attainment and the type of professional training given to them, effect the quality of education provided in Kenya's schools, and educational planners have attempted to improve teachers' qualifications. Efforts to upgrade teachers' credentials need, however, to be appraised in the context of several factors. The first and major consideration is the priority consistently accorded to expanding the educational system. As a result, the basic provision of teachers to staff schools as enrolment increased has had to take precedence. Kenyanization of the teaching profession has been an additional constraint. The high proportion of the national budget devoted to educational expenditures, much of which goes to teachers' salaries, has made the cost of raising teachers' credentials an important concern. In addition, the availability of manpower, particularly educated school-leavers and university graduates willing to enter the teaching profession, has figured prominently in Ministry decision-making.

Kenyanization of primary-school teaching, in contrast with secondary-level teaching, has not been a problem. Non-citizen teachers have not constituted more than 4 per cent of the primary teaching force since independence. However, the training or replacement of untrained teachers and the upgrading of the credentials of primary-school teachers has proceeded slowly. The percentage of trained primary-school teachers declined between 1962 and 1964, from 76 per cent to 69 per cent, as many of the better-qualified members of the teaching profession departed to take up other jobs. The teaching profession provided the major reservoir from which the public and private sectors recruited Kenyans to staff positions which were localized at the time of independence (Ominde, 1964: 109). By 1970 the percentage of trained teachers rose to 79 per cent, and in 1972 the Ministry of Education was able to meet the national goal of one trained teacher per class of 40 children. Then in 1974 the proportion of trained teachers decreased again, from 78 to 67 per cent, this time owing to the need to deploy a large number of new teachers when the elimination of school fees for the first four years of primary schooling brought about a sudden expansion of primary-school enrolments (MOE, Annual Reports).

In the years between 1964 and 1976 the secondary-school teaching force increased nearly six-fold. This rapid expansion necessitated considerable reliance on non-citizen teachers to staff secondary schools. Between 1964 and 1973 the proportion of secondary teachers that were Kenya citizens ranged from 44 per cent to 58 per cent. The establishment of a Faculty of Education offering an undergraduate degree programme in education at the University of Nairobi and the institution and expansion of the degree programme in education at Kenyatta College substantially increased the output of Kenyan graduate secondary-school teachers. The existence of a surplus job-market also made it easier to recruit untrained Kenyan graduates and EAACE's. By 1976 Kenyan citizens constituted 73 per cent of the secondary-school teaching profession (MOE, Annual Reports; CBS, 1977).

The Ministry of Education establishes requirements for professional certification of teachers and also determines the composition of the annual intake of recruits to pre-service training courses and in-service programmes. Classification of teachers into grades has depended primarily on the level of formal education completed prior to entrance into teacher-training colleges. Although the basic categorization of trained primary-school teachers into four grades, from P4, the lowest, to P1, the highest, has remained the same since independence, the requirements for professional certification have been raised. As Table 3 indicates, the P4 grade, which in the post-independence period generally has been reserved for primary-school leavers upgraded through in-service training programmes, has gradually been phased out of the teaching service. The most significant changes in minimum educational credentials for specific grades have occurred among primary teachers in the P2 and P3 grades. In 1964 P2s had two years of secondary schooling and two years of teacher training, while by 1975 new entrants had to complete four years of secondary

TABLE 3. Requirements for professional certification of teachers

Teaching grade	1964	1970	1975
Graduate	B.A. or B. Sc. with courses in education	B.A. or B. Sc. with minor in education	B.A. or B. Sc. with minor in education or B. Ed.
S1	HSC and 1 year training or CSC and 3 years' training	HSC and 1 year training or CSC and 3 years' training	EACE and one year training or EACE Division I and 3 years' training
P1	CSC and 2 years' training	School Certificate and 2 years' training	Division II EACE with passes in English, maths and science and 2 years' training
P2	2 years secondary schooling and 2 years' training	At least 2 years secondary and 5 passes KJSE or 4 years secondary but no school certificate and 2 years' training	Division III EACE with passes in English, maths and science and 2 years' training
P3	KPE and 2 years' training	Good pass on CPE and 2 years' training	KJSE with 5 passes including English, maths and science or EACE with 4 passes and 2 years' training
P4	Full primary course and 2 years' training	Weak pass on CPE and 2 years' training	No new recruits to grade

NOTE: HSC and EAAACE are equivalent to British "Advanced" levels. CSC and EACE are equivalent to British "Ordinary" levels. KJSE, the Kenya Junior Secondary Examination is taken after two years of secondary school. CPE and KPE are primary school leaving exams. Division I is the highest score and Division III the lowest graded pass on EACE.

SOURCE: Ministry of Education Annual Reports and Files.

school education with passes on the EACE ("O" levels) in English, math, and science to be eligible for selection. At the time of independence recruits to the P3 grade were taken from primary-school leavers, whereas by 1975 two years of secondary schooling was the minimum qualification for candidates from less-developed districts and four years of secondary schooling was the norm for candidates from better-developed districts.

Qualifications for secondary-school teachers have remained more stable. The two grades of trained secondary-school teachers have been S1 teachers, secondary-school leavers with either the equivalent of "O" or "A" levels and three or one years of teacher training respectively, and graduate teachers with university education. Among secondary-school teachers the major thrust has been to train sufficient numbers of Kenyans to replace non-citizens rather than to upgrade credentials.

Efforts to upgrade teachers have been two-pronged: in addition to raising requirements for professional certification, the Ministry of Education has altered the ratio of intake for pre-service training in favour of higher grades. As Table 4 shows, in the early post-independence period the majority of primary teaching recruits had a primary education, with or without KPE or CPE, the primary-school leaving examinations, and then were given two further years of training in a teacher-training college. In 1964 such P3 and P4 teachers constituted 75 per cent of the output of teacher-training colleges, and in 1967 P3s and P4s accounted for 62 per cent. The availability of more secondary-school leavers enabled the Ministry of Education to change the balance in recruitment, and 1972 was the last year for which a large number of CPE holders were accepted for P3 training. By 1973 the balance had shifted in favour of P2s and P1s, who then were recruited respectively from KJSE (Kenya Junior Secondary Examination taken after two years of secondary school), and EACE school-leavers. Together they made up 59 per cent of the output of non-graduate teachers in that year. By 1976 students with less than an EACE Division III with passes in English, maths and science accounted for only 12 per cent of the intake (Ministry of Education files).

TABLE 4. Output of teachers from local sources

	1964	1967	1969	1973	1975
Graduate	4	40 ¹	50	65 ¹	328
S1	11	116	259	493 ¹	388
P1	221	232	473	1 030	2 340
P2	337	717	1 064	1 109	976
P3	583	1 509	1 287		86
P4	34	47	29	973	1
Total	1 190	2 661	3 162	3 670	4 119

1. Number of students enrolled for final year, not total successfully qualifying
SOURCE Ministry of Education Annual Reports

Before 1975 the academic level attained prior to entering teacher-training colleges determined the professional grade for which candidates were eligible upon successful completion of their training. Similarly the major means for trained teachers to improve their grade of certification was through sitting as private candidates for higher school examinations. This system gave rise to several problems. The programme in the teacher-training colleges was basically the same for all students, with some allowance for differences in their academic competence, and there was not necessarily a correlation between the pre-service educational level of students and their performance at the training colleges. In 1975, for instance, the first year for which there were centrally set and marked final examinations, a higher proportion of P3s, 90 per cent, passed their examinations than P1s or P2s, of whom 84 per cent and 62 per cent respectively passed (MOE, 1975: 51).

The new system instituted in 1975 makes professional certification of students for P1, P2, and P3 grades dependent on their performance in teacher-training colleges. The ratio among the output will be 1:2:3. This will also enable the Ministry of Education to upgrade the pre-service educational qualifications of teachers without raising the total cost of teachers' salaries, since P3 teachers henceforth will tend to be secondary-school graduates, as will P2 and P1 teachers. Significant differences in the quality of education imparted by Kenya's primary-teaching training institutions suggests that some *de facto* specialization will eventualize: some will be preparing predominantly P1 teachers while others will be relegated to an output of P2s or P3s.

Until 1975 the major means of gaining promotions in grade was to study for higher academic examinations, and many teachers invested much of their time and energy in so doing. In one sample of primary-school teachers in Nairobi and surrounding localities, some 80 per cent were engaged in preparing as private candidates for these examinations (Sifuna, 1973: 183), probably to the detriment of their class work. Since 1975 advancement in grade will depend on promotion by merit rather than through taking examinations, and therefore will be easier to regulate. Teachers passing examinations will be eligible for increments in salaries but not for automatic promotions as in the past. In December 1976 and May 1977 a total of 535 teachers were promoted on the basis of merit (Files of the Inspectorate), suggesting that advancement will henceforth be a slow process.

As Tables 5 and 6 show, from 1964 through 1970, teachers with a primary-school education or with primary schooling plus two years' of teacher training constituted the mainstay of the profession, ranging upwards of 66 per cent of all teachers. Teachers with little more schooling than the education they were attempting to impart obviously had many limitations, and commissions investigating the educational system repeatedly called for their replacement with better-qualified teachers (Ominde, 1964; Ndegwa, 1971). Research showed that these teachers were more prone to lecture to their students and to encourage rote memorization of subject matter, since they lacked the self-confidence to attempt more innovative teaching techniques (Sifuna, 1973). In

TABLE 5. Profile of the primary-school teaching profession (by percentages)

	1964	1967	1970	1973	1976
<i>Qualified</i>					
Graduate or UK Ministry of Education certificate	1	1	—	—	—
S1	—	—	—	1	2
P1	6	5	7	11	15
P2	9	11	20	25	24
P3	42	45	44	37	19
P4	10	8	6	4	2
Other	—	1	1	—	1
<i>Untrained</i>					
Graduate	—	—	—	—	—
EAACE	—	—	—	—	1
EACE	1	2	2	9	22
KJSE	—	—	2	5	11
CPE	22	24	16	7	3
Other	8	4	1	1	—
Total	98	101	99	100	100

NOTE Totals do not necessarily add up to 100%, due to rounding

SOURCE Ministry of Education Annual Reports for 1964 through 1975. Central Bureau of Statistics, *Education 1976-1977* for 1976 figures

TABLE 6. Profile of Kenya citizens in primary-school teaching profession (percentages)

	1964	1967	1970	1973	1976
<i>Qualified</i>					
Graduate or UK Ministry of Education Certificate	—	—	—	—	—
S1	—	—	—	—	2
P1	5	3	6	11	15
P2	9	11	21	25	25
P3	42	47	45	37	19
P4	10	8	6	4	2
Other	1	1	—	—	—
<i>Untrained</i>					
Graduate	—	—	—	—	—
EAACE	—	—	—	—	—
EACE	1	2	2	9	22
KJSE	—	—	2	5	11
CPE	22	24	16	7	3
Other	8	4	1	1	—
Total	98	100	99	100	100

SOURCE Ministry of Education Annual Reports. Central Bureau of Statistics, *Education 1976, 1977*, for 1976 figures

1973 P3 teachers, who then tended to have a primary education and two years of teacher training, still were the single most numerous grade of teachers, but teachers with some secondary schooling now were in the majority, accounting for 51 per cent of all teachers. By 1976 the number of P2 teachers, with partial or completed secondary schooling and two years' of teacher training, had surpassed the number of P3 teachers, and 41 per cent of the primary-school teaching profession was composed of trained teachers with some secondary schooling. Of the untrained teachers in 1976, most had completed four or six years of secondary schooling.

The sex composition of the primary-level teaching profession has remained relatively stable. Women's representation in primary-school teaching, which is described in Table 7, has increased from 25 per cent in 1964 to 29 per cent in 1976. A higher proportion of female than male teachers have tended to be trained, suggesting that males may either have a greater interest in careers as untrained teachers or be given preference in hiring. Alternatively, since fewer females enter and complete secondary school, a higher percentage of the women inclined to pursue teaching may be recruited into the training colleges. As Table 8 indicates, the proportion of trained female teachers in different grades is not dissimilar to the percentage of male teachers.

TABLE 7. Women's representation in the primary-school teaching profession.

	Female teachers as percentage of total		
	Trained	Untrained	Total
1964,	27	21	25
1967	28	21	26
1970	28	24	27
1973	30	27	29
1976	32	22	29

SOURCE Computed from Ministry of Education Annual Reports

On the secondary-school level, Ministry of Education policy has been to assign S1 teachers, with either the EAACE or HSC ('A' levels) and one year of teacher training or the EACE or CSC ('O' levels) and three years of training, to Forms I and II of secondary school, and to staff Forms III to VI with graduate teachers. As Tables 9 and 10 and 11 show, the proportion of trained graduate and S1 teachers in aided secondary schools during the period under consideration has been between 66 per cent and 86 per cent of the staff (with the peak coming in 1973) but in unaided schools, which are in the private sector, the proportion of trained and S1 teachers has declined from 44 per cent in 1964 to 15 per cent in 1976. The percentage of graduate teachers, trained and untrained, in aided schools has been reduced from 66 per cent in

TABLE 8. Distribution of citizen primary-level teachers by sex and qualification (percentages)

	1964		1970		1976	
	M	F	M	F	M	F
<i>Qualified</i>						
P4	10	10	6	6	2	2
P3	43	45	41	56	15	28
P2	10	8	23	15	24	25
P1	4	9	7	4	16	14
S1	—	—	—	—	2	1
Other	—	—	1	1	—	2
<i>Untrained</i>						
HSC	—	—	—	—	1	2
CSC	1	1	2	1	25	14
KJSE	—	—	2	1	12	9
CPE	23	18	17	15	2	5
Other	9	7	1	1	—	—

SOURCE Ministry of Education Annual Reports for 1964 and 1970, Central Bureau of Statistics, *Education 1976, 1977*, for 1976

TABLE 9. Profile of secondary-school teaching force in aided schools (percentages).

	1964	1967	1970	1973	1976
<i>Qualified</i>					
Graduate	53	51	41	36	33
S1	13	18	34	50	43
P1	14	5	2	1	—
Other	—	4	4	2	14
<i>Untrained</i>					
Graduate	13	15	13	8	4
EAACE	5	5	5	2	2
EACE	1	1	1	1	1
Other	2	1	—	1	1
Total	101	100	100	101	98

NOTE Totals do not necessarily add up to 100%, due to rounding

SOURCE Ministry of Education Annual Reports for 1964 to 1973, central Bureau of Statistics, *Education 1976, 1977*, for 1976 figures.

1964 and 1967 to 37 per cent in 1976, while the percentage of S1 and untrained EAACE teachers has increased from 18 per cent in 1964 to 52 per cent in 1973 and 45 per cent in 1976. Staffing patterns in unaided schools have featured a decrease in the number of graduate teachers, trained and

TABLE 10. Profile of secondary-school teaching force in unaided schools (percentages).

	1964	1967	1970	1973	1976
<i>Qualified</i>					
Graduate	35	12	13	15	7
SI	9	5	6	9	8
PI	13	16	12	5	3
Other		5	3	2	10
<i>Untrained</i>					
Graduate	21	13	14	12	5
EAACE	13	21	23	31	38
EACE	6	17	24	23	24
Other	3	11	4	3	4
Total	100	100	99	100	99

NOTE: Totals do not necessarily add up to 100% due to rounding

SOURCE: Ministry of Education Annual Reports for 1964 to 1973, Central Bureau of Statistics, *Education* 1976, 1977 for 1976 figures

TABLE 11. Profile of Kenyans in secondary-school teaching profession (percentages).

	1964	1967	1970	1973	1976
<i>Qualified</i>					
Graduate	28	8	12	13	15
SI	21	20	35	45	31
PI	—	20	10	4	2
Other	16	5	3	2	2
<i>Untrained</i>					
Graduate	15	4	4	2	2
EAACE	12	19	17	19	29
EACE	4	14	17	14	17
Other	3	9	2	1	1
Total	99	99	100	100	99

NOTE: Totals do not necessarily add up to 100%, due to rounding

SOURCE: Ministry of Education Annual Reports and Central Bureau of Statistics, *Education* 1976-1977

untrained, from 56 per cent in 1964 to 15 per cent in 1976 and their replacement primarily by untrained teachers with EAACE and EACE.

From 1964 to 1976 the proportion of the secondary-school teaching profession in aided and unaided schools accounted for by professionally trained teachers declined from 72 per cent to 66 per cent. Whereas the percentage of untrained teachers decreased significantly in aided schools, from 21 per cent in 1964 to 8 per cent in 1976, unaided schools became increasingly more

reliant on untrained teachers, the percentage rising from 43 per cent in 1964 to 71 per cent. At the same time the balance in the relative size of the teaching force in aided and unaided institutions changed in favour of unaided schools.

These trends in staffing patterns reflect the changing composition of the secondary-school system. In 1964 there were 154 aided and 68 unaided schools, and most of the unaided institutions were private schools operated by a church or voluntary organization. The *Harambee* movement fundamentally altered the distribution of schools. By 1976 there were 420 aided schools and 967 unaided schools apportioned as follows: 761 unaided *Harambee* schools, 70 unaided church schools and 136 unaided private schools. Whereas private and church secondary schools, particularly in the early post-independence period, maintained standards and staffing patterns quite comparable to aided institutions, *Harambee* schools and some of the more recently opened private institutions have had to rely on less-qualified and predominantly untrained faculties to staff their schools.

Kenyanization juxtaposed with the rapid expansion of the secondary-level teaching force and the recruitment of expatriate teachers on short-term contracts have tended to produce a relatively young and inexperienced secondary-school teaching profession. The 1974 secondary-school teacher census indicated, for example, that 42 per cent of the teachers responding and completing the forms had been at their present school for only one year. There were not significant differences between males and females (CBS, unpub. D). This situation is exacerbated by frequent requests for transfers and a high wastage rate, particularly among graduate teachers. A Ministry of Education Planning Unit cohort study of secondary-school teachers who joined the profession in 1970 showed that 35 per cent of the teachers dropped out within a period of five years. This produced an annual drop-out rate of about 7 per cent, which is estimated to be more than twice as high as among primary-school teachers. Moreover, far more graduate teachers left the profession than non-graduate teachers; about 11 per cent of all graduate teachers dropped out annually, while the rate of non-graduate wastage was only 4 per cent (Wachira, 1975).

Males have predominated among secondary-school teachers as they have among primary-school teachers. The proportion of women, as shown in Table 12, has declined from 34 per cent in 1964 to 29 per cent in 1976, the reverse of the primary-school pattern. Females have tended to constitute a higher proportion of expatriate than Kenyan teachers. Women's under-representation at the secondary and university levels of the Kenyan educational system presents the possibility that the sex composition of the secondary teaching profession will continue to change slightly in favour of males as Kenyanization proceeds, particularly if there are few other employment prospects for male arts graduates. However, since the representation of females increased between 1973 and 1976 from 26 per cent to 29 per cent, such a trend toward masculinization may not take place.

TABLE 12. Representation of females in the secondary-school teaching profession (female teachers as percentage of total).

	Trained			Untrained			Trained and untrained
	Citizens	Non- citizens	Total	Citizens	Non- citizens	Total	Total
1964	41 ¹	30	33	39 ¹	32	36	34
1967	17	41	32	11	32	22	28
1970	24	39	32	16	34	24	29
1973	24	33	29	15	35	22	26
1976	23	56	32	17	45	22	29

1. Local teachers who may not necessarily be citizens

SOURCE Computed from Ministry of Education Annual Reports

The major change in the training of secondary-level teachers has been the shift from non-graduate teachers to graduate teachers. S1 non-graduate teachers for secondary schools have been trained at several institutions: Kenya Science Teachers College, Egerton College (in agriculture), Kenya Polytechnic (for technical teachers), and Kenyatta University College. With the exception of the latter institution, none of these also produced graduate teachers. A peak in the output of S1 teachers occurred in 1973, when 493 students were registered for the final year of training, more than seven times the number of candidates enrolled in university education programmes. The upgrading of Kenyatta College to university college status and the opening of Kenya Education Centre offering a bachelor of education degree programme at the University of Nairobi, both in 1972, substantially increased Kenya's production of graduate teachers. Prior to 1972 the University trained small numbers of teachers through a post-graduate diploma and from 1969 through an education minor option. The Government then reduced commensurately the intake of training programmes for S1 teachers. By 1971 the output of S1 teachers had exceeded the numbers of teachers of this grade required for staffing the first two years of maintained secondary schools, and the continued production of S1 teachers at the same levels would have necessitated the deployment of many of them either in unaided secondary schools or in primary schools. The Government, which assumes the cost of training S1 teachers, does not accept responsibility for staffing unaided secondary schools and therefore does not take into account the needs of the private educational sector in its manpower projections for the teaching profession, although a larger number of students are serviced by unaided than maintained secondary schools. The primary-school budget, already strained by population pressure on the school system, did not permit the absorption of S1 teachers and their training did not include primary-teaching methodology. Therefore, Kenyatta University College, the largest producer of S1 teachers, has gradually phased

out its three-year S1 programme geared for EACE school-leavers and its one-year S1 course for EAACE leavers. Instead it offers a two-year diploma course to a smaller number of EAACE-level students, who then have the future option of being upgraded to graduate status. In 1977 the Faculty of Education at the University of Nairobi and Kenyatta University College had the largest number of graduates of any field in the university system, together accounting for 669 of the 1,891 students receiving a degree in October 1977 (University calls for separate fund allocation. 1977). Continued production of graduate humanities teachers at the same levels probably will push S1 teachers out of maintained schools and/or require some of the graduate teachers trained at Government expense to be assigned to unaided institutions.

In-service courses for untrained teachers have sought to provide experienced primary teachers with the professional qualifications imparted by the teachers colleges. Despite the reliance on large numbers of untrained teachers by secondary schools, the Ministry of Education has not initiated any comparable programmes for providing EACE or EAACE untrained teachers with opportunities for professional certification, possibly because most of the untrained teachers serve at unaided schools. Initially, as Table 13 reveals, most of the untrained teachers admitted to in-service programmes had a primary education, with or without KPE or CPE, and after successfully completing two years of in-service training were confirmed as either P3 or P4 teachers and awarded the relevant certificates. Later many of the untrained teachers recruited for the in-service programme were KJSE and EACE holders, who were prepared as P2 teachers. The course begun in 1974, in contrast with its predecessors, was for four years leading to P1 or P2 certification. The Ministry of Education also has provided in-service upgrading courses for P1 teachers raising them to S1 levels for a total of 278 teachers

TABLE 13. Output of in-service training courses for untrained teachers

	P4	P3	P2
1966	57	171	
1967	140	1 168	
1969	—	1 527	
1970	36	1 557	
1971	21	1 084	
1972	11	1 060	
1974	—	441 ¹	
1975	1	822	25
Totals	267	7 830	25

¹ Combined P2/P3 total

SOURCE: Ministry of Education files

between 1966 and 1970 (MOE files). All in-service programmes have combined residence in teachers colleges or secondary schools during school vacations with correspondence courses and special radio broadcasts. The rate of successful completion of these courses generally has been above 80 per cent, or somewhat below the passing rate for pre-service programmes, but many of the students not receiving certification immediately after the course are referred to take the examination a second time (computed from circulars of the Examination Unit). Teachers upgraded through in-service training, despite the brevity of the course, receive the same rankings and benefits as teachers prepared in pre-service courses.

Recruitment of candidates for primary teacher-training colleges, which has been equivalent to the recruitment of trained teachers, has been based on merit, as modified by the operation of two types of quotas, one based on district of origin and one based on sex. Allocation of places according to the size of district primary enrolment ensures a fair distribution, particularly for the less-developed areas whose students could not compete successfully against candidates from better-developed districts. This system of district quotas, by enabling applicants from less-developed districts to be selected with lower academic qualifications, has been one factor in retarding the upgrading of entrance requirements. Competition among applicants from more advanced districts frequently has pushed the average credentials of this group above the minimum specifications, but the Ministry of Education has been reluctant to raise qualifications too far above the levels of the educational attainment of the less-developed districts for fear of excluding potential teachers from these areas.

Officials in the Ministry of Education attribute the sex quota, which, as Table 14 shows, reserves about two-thirds of all places for males and one-third for females, to the distribution of dormitory facilities in the training colleges. However, it should be noted that between 1972 and 1974 the Ministry undertook a major programme of reducing the number of teacher-training colleges from 24 to 17 while expanding the capacity of those that

TABLE 14. Total enrolment of students in teachers' colleges by sex and level.

	1964		1970		1975	
	M	F	M	F	M	F
SI (one year)	21	9	38	9	—	—
SI (three years)	62	63	805	306	700 ¹	97
P1	371	151	1 061	568	3 701	1 448
P2	466	159	1 562	852	1 828	1 074
P3/P4	2 331	900	1 460	1 232	101	54

¹ Does not include enrolment at Kenya Polytechnic or Egerton College

SOURCE Ministry of Education Annual Reports, Kenyatta University College Annual Report for 1975

remained to accommodate between 500 and 700 students each (MOE, 1975: 24-25). In the process of this reorganization the Ministry could have changed dormitories to provide proportionally more room for females if it had so desired. Although data are not available it seems quite plausible that in the early years after independence the quota enabled some females with lower qualifications than the average male to be admitted. The new entrance requirements of prior teaching experience and passes in maths and science may once again disadvantage females, with the sex quota serving to protect their share of places for teacher training. It should also be noted that the intake ratios of females and males to teacher-training programmes generally have been commensurate with their relative share of secondary-school enrolment.

The sex quota applies to the total distribution of students in teacher-training colleges. The relative proportion of females among the grades, which is described in Table 14, has been variable. In 1964 women were over-represented among S1s and very under-represented among P3/P4 trainees. In 1970 and 1975 the tendency was for women to be under-represented at the higher grades and over-represented at the lower grades.

Recruitment of candidates has been through different procedures for secondary-school leavers and applicants with less than four years of secondary schooling. In the past P3 trainees generally were supposed to have some prior teaching experience and applicants required the sponsorship or at least a supporting statement from the school at which they taught, which was forwarded through district education authorities. At some points applicants were also interviewed by the principals of the teachers' colleges. One of the major difficulties with this procedure was the lack of time and information the district education authorities had on which to base their recommendations for selection. When P2 trainees were selected from KJSEs, the students passing the examination taken after two years of secondary school, students filed application forms distributed through the schools. Since the KJSE is taken only by students in unaided (*Harambee*) schools, virtually all of whom were unsuccessful in finding places in maintained secondary schools, this policy targeted a less academically gifted group of students who also had received an inferior secondary-school education. In many cases communications between the Ministry of Education and the headmasters of *Harambee* schools were unsatisfactory and students from these schools were not encouraged to apply. Occasionally teachers' colleges recruited students from the maintained-school system, but they tended to be failed School Certificates (Kimalel, 1968).

Recruitment of secondary-school leavers for teacher-training colleges has been through a centralized system based on Form IV students throughout the country completing complex forms indicating their preferences for upper-secondary school and/or career training of various types. For several years the process has been computerized, with entrance lists being compiled in the order of the students' scores on the EACE. In principle this provides for an

equitable and orderly means of selection. In fact, there are many problems. In former years when teacher-training colleges and upper-secondary schools chose their entrants separately, the dual system of applications, combined with the overwhelming preference for Form V entrance, often resulted in many of the students who were accepted into training colleges never arriving to begin their course. Similarly many Form VI applicants to S1 programmes were reluctant to commit themselves until they had pursued entrance to university degree programmes (Kimallel, 1968). Combined application forms, on which students must indicate three preferences prior to their taking the EACE, introduce a kind of lottery in which students anticipate the types of programme for which they will qualify. The very complexity of the forms and their codes discourages many potential applicants and invalidates a fair proportion of the forms.

The distribution of preferences on the Form V career training-forms for 1976, as described in Table 15, reveals that the overwhelming majority of students gamble on finding places in Form V. Even if each of the applicants to Form V had listed three secondary schools, so that about 35,000 total had applied for upper-secondary school in 1976, this would constitute seven times the number of available places. More than ten times as many candidates selected entrance to Form V as their first, second, or third choice as applied for primary or secondary teaching programmes. Moreover, teaching was less popular with both females and males than virtually all other types of career training programmes. This lack of popularity is reputed to reflect the racial division of the educational system during the colonial period with the resultant depression of standards in the African schools, the relatively low salaries teachers were paid for many years, and the heavy teaching loads assigned them. The distribution of preferences in Table 15 implies that teaching is not

TABLE 15. EACE career selection in 1976.

	Number of students selecting as first, second, or third choice		
	Boys	Girls	Total
Primary teaching	4 998	2 399	7 397
Secondary teaching	1 712	651	2 363
Form V	75 145	28 899	104 044
Agriculture, range management or water development career training	26 086	5 016	31 102
Medical and laboratory career training	11 770	13 770	25 540
Engineering and technical career training	11 352	91	11 443
Woodworking, building, printing and automotive training	1 364	1	1 365
Tourist and hotel career training	9 945	4 378	14 323
Secretarial, office work and misc. training	13 813	11 834	25 647

SCH RCF Analysis of career selection forms

likely to attract the better students and that some of the recruits to teaching probably regard it as a last resort. In one study of a cohort of teacher trainees entering teachers' colleges in 1969 and 1970, teaching was the first choice of only 18 of the 129 students traced (interview with D. Sifuna).

The selection mechanisms for S1 and university teaching programmes contain many of the same dilemmas. Most of the entrants to Kenyatta University College were refused by the University of Nairobi, which has first choice and takes most of the best candidates. When the Faculty of Education at the University of Nairobi began its degree programme the policy or practice was for it to admit all applicants with minimum university entrance requirements. Since most other departments and faculties specified entrance criteria above and beyond that required for university entrance, the Faculty of Education became the haven for students unable to meet these extra qualifications. It tended to recruit a disproportionate number of arts students because students with science specializations generally were eligible for entrance into other departments and preferred them over the Faculty of Education. This procedure facilitated expansion of the Faculty of Education and helped to alleviate the national shortage of secondary-school teachers, but it did not add to the prestige of the Faculty of Education or assure that it trained students committed to a teaching career. In the last three years the Faculty of Education has become more selective; it admits only students who have listed education as one of their choices on the entrance forms and it takes the subject requirements of the educational system into account more. The prospect of unemployment for "general" degree candidates appears to have made the possibility of gaining professional training more popular, giving the Faculty of Education a larger pool of candidates on which to base their selection. In the process the Faculty of Education and Kenyatta University College have been able to increase the proportion of science specialists, but not sufficiently to counter the over-supply of graduate arts teachers in most fields and the deficit of science and maths teachers. In 1977 a total of 489 teachers graduated with specializations in arts, compared to 160 who graduated from the Faculty of Education and Kenyatta University College in science (University calls for separate fund allocation, 1977: 5). As of the 1977/78 academic year the degree educational programme at the University of Nairobi will be moved to Kenyatta University College. It is difficult to anticipate how the consolidation of the Faculty of Education at Kenyatta University College will affect either the number of graduate teachers that are trained or the quality of the students.

One problem in the development of the teaching profession which has been related to the selection process described above, has been the insufficient production of graduate citizen teachers for many fields. Analyzing teachers by the subjects they taught in the 1974 census week indicates that English, history, geography and mathematics involved most of the graduate teachers and other subjects were rarely taught by graduates (CBS, unpub. D). In terms of the subject competence of citizen graduate teachers, substantial shortages

remain in mathematics, the sciences, and languages, and dependence on non-citizen teachers persists (except for Kiswahili). Estimates made by the Ministry of Education Planning Unit of the numbers of graduate teachers required in specific fields as compared with the numbers of citizen graduate teachers likely to be trained by the early 1980s predict that Kenya will be self-sufficient in biology and nearly self-reliant in English and French, but will have to continue recruiting expatriate graduate teachers of mathematics, chemistry and physics (ministry of Education Planning Unit, unpub.).

Secondary-school teaching has been a more popular option for female than for male university students. Of the 371 female Kenyan citizens who were undergraduates at the University of Nairobi in the 1975/76 academic year, 269 were enrolled in the Faculty of Education. In contrast with this female enrolment rate of 73 per cent, only 17 per cent of Kenyan male undergraduates were registered in the Faculty of Education (Office of the Registrar, 1976). Numbers of female students at Kenyatta University College, which is exclusively concerned with education, in recent years have approximated the total numbers of women in all departments at the University of Nairobi. Whereas women now constitute something less than 10 per cent of enrolment at the University of Nairobi, they have constituted slightly more than 30 per cent of the student body at Kenyatta University College in recent years (Office of the Registrar, 1976; Ministry of Education Annual Reports, 1975 and 1976). The over-representation of women in education could reflect cultural norms that designate teaching as a particularly suitable profession for university-educated women or conversely it could result from women's difficulties in gaining admission to the University of Nairobi and its constituent departments that have rigorous entrance requirements.

Improvements in qualifications of entrants to primary-teachers' colleges do not appear to have produced higher standards of professional training. One major reason is that up to the present time, primary-teachers' colleges have been operated as a kind of extension of the secondary-school system and have emphasized academic rather than professional training. Initially this bias reflected the limited schooling of most of the recruits prior to entering teachers' colleges, most of whom had little more than a primary-school certificate, and the Ministry's assessment that they could not teach successfully unless they had a better grasp of subject matter. More recent efforts of the teachers' college curriculum unit in the Ministry to increase the professional component of the training beyond the one-fourth or one-third time allocation up to two-thirds time have not been successful. Although the Ministry of Education has suggested the subjects to be covered, teachers' colleges have had a great deal of autonomy in determining their own curriculum. Until 1975 the teachers' colleges also set and/or marked their own examination. The Ministry of Education now has introduced uniform syllabi for education and methods, Kiswahili, and mathematics, and sets and marks all examinations centrally. This will undoubtedly produce greater control over the content of the teachers' training course.

The training and orientation of tutors in the teacher-training colleges has been another factor thwarting greater emphasis on teaching methods. Kenyaization of the staff of teacher-training colleges has replaced expatriates with Kenyan S1 and graduate tutors, neither of whom has been exposed in their own training to primary-school teaching methods. By 1974 80 per cent of the staff of teachers' colleges were citizens, two-thirds of whom were S1 teachers and one-third of whom were graduates (MOE, 1975: 27). In 1975 the Ministry instituted new scales for faculty in teachers' colleges that had been recommended by the Ndegwa Commission in an effort to upgrade the qualifications of staff. The higher pay scales have attracted more graduate teachers, sometimes at the expense of secondary-school staffing, but this group is not any more conversant with primary-level teaching than the S1 tutors. To rectify the situation, the Ministry of Education sponsored and the University of Nairobi initiated in 1975 an M.A./M.Ed. two-year programme tailored for graduate teachers with a specialization in primary education. With an annual intake of 25 students, it will take many years to retrain faculty of teachers' colleges.

The training of more university-educated secondary-school teachers has not necessarily improved the quality of teaching in secondary schools. The high rate of wastage and transfer among graduate teachers suggests that few remain in a school or in the profession long enough to be truly proficient. However, as alternative employment opportunities become more restricted for university graduates, the wastage rate is likely to be considerably reduced.

Recurrent costs for education consistently have constituted the largest item of expenditure in the Government budget in recent years, averaging close to 30 per cent of total government recurrent expenditure. Of this investment in education, about 70 per cent has gone for teachers' salaries. In the 1977-1978 financial year, for example, £53,553,210 of the £80,256,900 in the education vote is for salaries, £45,160,000 just for primary teachers' wages and salaries. In establishing salary scales for teachers the Government has had to balance the costs of education against the need to set the scales sufficiently high to attract a permanent, professional cadre of teachers.

Teachers salaries have been raised several times since 1964, as described in Table 16, with the proportioned increase highest for teachers in the lowest grades. The percentage increase in the entry point of different grades has ranged from 171 per cent for untrained teachers with a primary education and CPE to 79 per cent for untrained teachers with the EAACE and two principals. Among trained teachers the rates of increase have been 130 per cent and 144 per cent respectively for P4 and P3 teachers but only 32 per cent for graduate teachers. This has resulted in a restructuring of the salary scales to reduce differentials between the grades. The relative upgrading in the educational qualifications of the P4, P3 and P2 teachers probably warranted some change, but overall the motivation seems to have been to improve teachers' credentials without raising the total salary bill too much.

All of the readjustments in salaries have left the scales for untrained

TABLE 16. Salary scales for teachers (K£ per annum).

	1964	1967	1972	1975	1977
<i>Untrained teachers</i>					
Primary without CPE	84	90	120	189	228
Primary with CPE	96	103	126	210	246
KJSE	108	117	138	240	282
EACE	240	252	252	363	399
EAAACE 1 Principal	300	330	330	477	525
EAAACE 2 Principals	330	366	366	528	591
<i>Trained Teachers</i>					
P4	120-180	135-231	162-306	237-411	276-453
P3	162-264	180-360	270-528	360-654	396-711
P2	240-456	246-480	306-636	414-756	471-813
P1	348-726	378-756	447-906	594-1071	654-1110
S1	582-1110	684-1110	702-1326	819-1476	855-1476
Graduate	804-1710	810-1710	906-1854	1059-2004	1059-2004

SOURCE Ministry of Education files and Teachers' Service Commission

teachers considerably lower than for trained teachers, ostensibly to discourage untrained teachers from pursuing a permanent career in teaching. Also untrained teachers have not been eligible for annual increments as have trained teachers. However, the extra costs entailed in eliminating untrained teachers and replacing them with trained teachers have deterred the Ministry of Education from attempting to do so, and the unionization of the teaching profession discourages a wholesale replacement of unqualified teachers as well.

II. The civil service

In 1962, on the eve of independence, the public sector employed 168,462 persons, of whom 89,085 were members of the civil service (Central Government Service). At that time the civil service was only 79 per cent Africanized. In terms of the employment of females, more women of European and Asian descent (2,344) held jobs in the civil service than did women of African descent (1,825) (Economics and Statistics Division, 1963: Table III). The civil service, like other institutions, reflected Kenya's legacy of racial stratification: Europeans dominated the administrative, professional, and higher-executive posts; Asians held most of the middle- and lower-executive posts and senior clerical positions, while Africans were found in a few executive posts, but mostly in clerical and subordinate grades (Pratt, 1963: 10).

Under such circumstances, Africanization of the public sector took precedence over other staffing considerations. Shortages of Kenyan citizens to fill high- and middle-level positions as non-citizens retired and departed led to an initial decline in educational qualifications in several occupational groupings and/or retarded the replacement process. By July 1971, however, the civil service was 96.5 per cent localized (Wamalwa, 1972: 4). Table 17 portrays the extent to which, as of January 1972, high- and middle-level manpower positions were filled by Kenyan citizens in both the private and public sectors. As the data indicate, the public sector was considerably more Kenyanized than the private sector, but still was reliant on non-citizens to staff some occupational groups, particularly the professions. These data also show that females were relegated primarily to semi-professional and clerical positions.

The thrust in the civil service, as in other sectors, has been to raise minimum educational qualifications for recruitment and promotion. Generally the process of upgrading qualifications has involved the Directorate of Personnel Management instituting a separate scheme of service for a particular occupation grouping intended to provide for "a competent and efficient cadre of officials with a consistent professional approach" (Personnel Circulars). These schemes of service designate the duties of each grade, the minimum educational requirements for recruitment and advancement, the conditions for advancement, and the salary scales. Over time the schemes of service have

TABLE 17. High and middle manpower by major occupational group, economic sector, citizenship and sex as of 3 January 1972.

	Citizens		Non-citizens	
	Male	Female	Male	Female
<i>Private sector</i>	%	%	%	%
Managers	60	2	34	3
Professionals	20	0	71	9
Semi-professionals and technicians	47	10	26	17
Skilled clericals	56	22	11	12
Skilled manuals	80	1	17	2
<i>Public Sector</i>				
Managers	89	0	11	0
Professionals	47	3	47	4
Semi-professionals and technicians	64	20	12	5
Skilled clericals	74	15	9	3
Skilled manuals	90	0	10	0
<i>Totals</i>				
Managers	61	2	34	3
Professionals	33	1	59	6
Semi-professionals and technicians	58	17	17	9
Skilled clericals	64	18	10	8
Skilled manuals	82	1	15	2

SOURCE Central Bureau of Statistics, Unpub. A: Table 13

become more specialized and differentiated personnel, supplies, accountancy, and economics and statistics among others as separate groupings within the civil service. The identification of career services also has helped the Government to develop appropriate forms of pre-service and in-service training.

In some respects the redefinition of minimum educational qualifications does involve an element of "credential obsolescence" reflecting a changing balance between supply and demand, but it also has been a necessary strategy to improve the quality of the civil service. Various commissions and committees reviewing the public sector have commented unfavourably on the low standards of many civil service employees and attributed their inabilities to perform adequately to their low educational qualifications. A comprehensive review of training, undertaken in 1971-72 by the Wamalwa Committee, for example, specifically stressed the need for upgrading the educational attainment and professional training of clerical staff, personnel officers, accountants and bookkeepers, and secretarial staff (Wamalwa, 1972: 17-22). In the years after independence lower clerical staff and copy typists generally had little more than a primary-level education, which was hardly sufficient to operate effectively. Requiring a secondary-level education for middle-range jobs within the civil service does not seem to be an excessive or unreasonable educational standard.

Although the upgrading of qualifications has taken place at all levels, it has been most characteristic of the middle-range occupational groups, such as the clerical, secretarial and executive positions. The subordinate service, which consists of skilled labourers, unskilled labourers and uniformed staff, such as office messengers, watchmen, and lift attendants, generally have not been recruited into specific schemes of service with carefully graded educational requirements. A surplus labour market rather than job specifications has pushed the general educational standard upward for recruits to the subordinate service. Moreover, probably more in the recent past than at present, many members of the subordinate service have had the opportunity to advance into the clerical or sub-technical service by passing the appropriate examination or departmental test. This presumably enabled the best educated and most ambitious members of the subordinate staff to move to the middle grades. At the opposite end of the civil-service spectrum, many administrative and professional positions already required at least a university degree prior to independence, and standards were not relaxed despite the scarcity of trained citizen manpower. Among such groups as education officers, provincial administrators, economists, engineers, veterinary officers and doctors, all entrants have had to have university education. In a few cases, such as the service for economists and statisticians, it has become the norm to require a master's degree or encourage some officers to seek a doctorate for advancement beyond the entering grades, but this is more an exception than the rule.

The raising of minimum educational qualifications has occurred in regard to both academic and professional standards and has reflected the development of training programmes as well as the increasing output of the educational system. The public sector now recruits Form IV school-leavers for a variety of career-training programmes through the career-training/Form V application process described previously. In addition to teacher training, pre-service programmes are offered in agriculture; water development; health; technical work; craftwork; tourism, travel and other services; and skilled office work. Programmes differ in entrance qualifications (examination results and subjects read), length, and sophistication of skills imparted. Table 15 described the distribution of Form IV applicants' three choices in 1976. It indicated, for instance, that among women secretarial training was more popular than teaching. In 1975/76 1,082 first-choice applications were filed by female Form IV secondary-school students for the 100 places in Governmental Secretarial College. All of the career programmes attract many more applicants than there is intake. The ratio of acceptances to first preference applicants in 1975/76, for example, was approximately 1:10 for water development, 1:8 for agriculture, 1:8 for health, and 1:11 for technical training programmes (MOE, 1976B). Consequently, the competition generally enables the civil service to take students with the best examination results, division I passes, for its training programmes.

In addition to the programmes recruiting Form IV leavers, the Government has other pre-service and in-service training programmes. Tables 18 and 19

TABLE 18. Government ministries' pre-service training.

Ministry	Numbers trained		
	1975/76	1976/77	1977/78
Agriculture	196	584	483
Works	225	103	31
Water development	89	105	106
Co-operatives	—	55	20
Lands & settlement	43	15	42
Tourism & wildlife	—	—	30
Commerce & industry	17	—	23
Information & broadcasting	15	35	50
Office of President:			
Government press	6	19	16
Police	41	26	40
Power & communication	—	23	85
Home affairs	—	18	7
Natural resources	—	35	—
D.P.M. ¹ (secretarial)	—	—	365
Housing & social services	—	—	12
Finance	—	30	75

1. Directorate of Personnel Management

SOURCE: Government files

TABLE 19. Government ministries' in-service training 1977/78

Ministry	Number
Agriculture	105
Works	12
Water development	10
Lands & settlement	39
Tourism & wildlife	12
Finance & planning	32
Office of President	21
Natural resources	21
Directorate of personnel management	105
Housing & social services	4
Home affairs	8
Finance	56
Information & broadcasting	25

SOURCE: Government files

detail the number of courses offered by ministry. In 1977/78 the civil service trained 1,385 recruits in pre-service courses and 450 staff in in-service courses. The training section of the Directorate of Personnel Management has the main responsibility for the formulation of training activities for the public sector and exercises it chiefly through the dispersal of funds. The Directorate directly operates two training institutions, namely the Kenya Institute of Administration, which generally organizes courses for managers, accountants, and personnel officers, and the Government Training Institute, Maseno, which provides training for lower occupational grades, such as clerical staff. For high-level technical staff much of the training is overseas. Between 1974 and 1977, for example, the Central Bureau of Statistics sent 16 senior demographers, economists, and statisticians for further training in Europe and the United States, while 35 middle-level and entering professional staff were trained in various East African institutions (Files of the Ministry of Finance and Planning).

The general policy in the public sector is to bond for a period of three years all trainees for whom the Government has financed more than six months of pre-service or in-service training. If the staff member finds another job within the public sector, the bond is transferred. Alternatively the employee or a prospective employer can reimburse the Government for the cost of the training. The higher salaries and/or better conditions of service offered for highly qualified personnel in some of the other branches of the public service and by some firms in the private sector make the civil service vulnerable to losing staff trained for specific posts.

In the division of labour regarding recruitment, the Directorate of Personnel Management determines the conditions of service, the minimum educational credentials, and the number of authorized positions for specific occupational groups within ministries, while the Public Service Commission undertakes the selection of candidates, excepting the lower-level jobs which many ministries fill directly on the basis of applications in their files. In 1975, for instance, 4,500 vacancies were reported to the Public Service Commission which the Commission then advertised in the *Kenya Gazette* and the local press. Although this figure represented a considerable increase over the 2,870 positions advertised in 1963, it does not begin to balance with the major expansion of the school system during this period. In 1975 the Commission's advertisements drew 16,187 applications. Of the appointments made, 1,100 resulted from these applications and 2,700 otherwise, most likely from internal promotions (Public Service Commission, 1976). The Public Service Commission also sets and grades examinations required for advancement in several of the occupational groups, such as the Government occupational tests for storemen, the administrative officers' examination, and the proficiency examination for clerical officers.

Growth of the civil service, as of all sectors of the Kenyan economy, has not been even and has favoured some occupational groups over others. Table 20 describes the increases in the three occupational groupings within the civil

TABLE 20. Growth of selected occupational groups in the Central Government service, 1963-76

Occupational group	1963	1972	1976
Secretarial staff	248	2 072	3 062
Clerks	4 287	19 274	14 687
Middle-level managers	1 660	2 591	4 400

NOTE: Occupational classifications have changed with time and are not strictly comparable. The 1963 clerical group included copy-typists. Middle-level managers in 1963 included only executive-class personnel.

SOURCE: Kenya Government, 1963, Central Bureau of Statistics, Unpub. data from 1972 and 1976 Labour Enumerations.

service analyzed in this paper. As the table notes, occupational classifications have changed through time, leaving the data not fully comparable. These revisions may explain in part the decline in size of the clerical ranks between 1972 and 1976. The 1973 clerical scheme of service eliminated the grade of junior clerical officer and some of the personnel formerly performing these functions may now be considered as part of the subordinate service. Even with the decrease in numbers between 1972 and 1976, the clerical staff remains considerably larger than either secretarial workers or middle-level managers. In relative terms the secretarial cadre has grown the most, but if the typists included in the clerical ranks in the 1963 enumeration were added to the secretarial staff, the proportional increase would be less than indicated in the table.

The secretarial service

At independence the Kenya Government lacked an efficient and economic typing and secretarial service because no provision had been made for a permanent career structure. Many of the secretarial and shorthand-typing staff were non-citizen females recruited on temporary conditions of service at high salaries. In 1963, for example, there were only 49 secretaries in Government service on pensionable terms, 28 of whom were Europeans, 17 Asians, and four Africans; and 50 secretarial staff on contract terms, 30 of whom were Europeans, 17 Asians, and three Africans. An additional 171 secretaries had been recruited on temporary terms: 121 Europeans, 49 Asians, and one African (Kenya Government, 1963). Clerical staff performed some of the work of copy-typists and junior shorthand-typists, but few of the clerks assigned to typing pools were adequately trained. Of the clerical and typing ranks in 1963, 3,141 members were on pensionable terms: nine Europeans, 1,066 Asians, 2,033 Africans, and 33 Arabs; 203 members held contract positions, and 943 were on temporary terms (Kenya Government, 1963).

The Pratt Commission of 1963 on the Kenya Civil Service and the Kenya Teaching Services recommended that the typing and secretarial staff form a cadre with distinct qualifications for entry and separate promotion rules and requirements, but also suggested that specifications for credentials and salary

scales be set relatively low. The Pratt Commission assumed that because most of the recruits would be female that they would consider secretarial work to be a short-term rather than long-term career and would probably retire at marriage. Furthermore, it anticipated that the exodus of married non-citizen women, who had been filling a large number of the more senior posts, would produce a shortage of such highly qualified staff. Although the number of people available to assume senior posts would be inadequate, the Pratt Commission foresaw that there would soon be a reasonable number of young people with a primary-school or secondary-school education able to take up the work of copy-typists and the lowest grade of shorthand-typists. In order to adjust to this situation, it proposed to reduce the number of personal secretaries in favour of relying on typing pools, to accept the deficit of experienced secretarial workers and recruit recently trained personnel, and to consider the employment of married women on permanent and pensionable terms (Pratt, 1963, 1963: 30-36).

In 1966 the Directorate of Personnel Management instituted a centralized secretarial service for the Central Government. The establishment of such a centralized secretarial cadre vested the Directorate with the permanent authority for determining specifications of minimum educational qualifications for recruitment and advancement and conditions of service, including salary scales. Although all secretarial workers were to be staff of particular ministries, the Directorate also retained the right to repost typists, stenographers, and personal secretaries to other Government ministries and departments. In actuality, though, individual ministries have been given discretion to recruit their own staff, subject to the existence of an authorized vacancy and the requirements of the Directorate. Most secretarial workers pass their entire careers within the original ministry into which they are hired.

To remedy the lack of adequate training facilities, the Government established two secretarial colleges, one in Nairobi and one in Mombasa, to produce local skilled secretarial workers. Individual ministries have tended to recruit their staff directly from the students at these colleges, who are bonded to work for three years in the public sector. When vacancies occur at higher levels, ministries frequently have filled their needs by sending copy-typists or stenographers for upgrading courses at Government training institutions, such as the Government Training Institute, Maseno. Shortages of highly skilled shorthand-typists and personal secretaries sometimes have left vacancies unfilled for long periods and have prompted more interministerial shifts of secretarial staff at this level than among copy-typists and lower-grade stenographers.

As Table 21 shows, the Directorate of Personnel Management adopted many of the Pratt Commission's recommendations in its establishment of a secretarial service in 1966. Initially copy-typists, the largest number of secretarial workers to be employed, were recruited from primary-school leavers with typing skills of between 30 and 50 words per minute. In 1976 the minimum academic qualification was raised to the Kenya Junior/Secondary

TABLE 21. Minimum qualifications for secretaries.

	1966	1976	1977
<i>Copy-typists</i>	Completed primary (CPE) plus:	Kenya Junior Primary Exam and Elementary Certificate of Business Ed. in 3 subjects plus:	Secondary "O" Level, Div III or passes in business subjects plus pass in Bus. Eng. Stage III, other wise all others same as 1976.
Grade 3	Typing speed 30 w.p.m.	Typing speed 30 w.p.m.	
Grade 2	Typing speed 40 w.p.m.	Typing speed 40 w.p.m. and Intermediate Group Certificate in Business Ed. in 3 subjects	
Grade 1	Typing speed 50 w.p.m.	Typing speed 50 w.p.m. and Advanced Group Certificate in Business Ed.	
<i>Shorthand-typists</i>	Four years of secondary — "O" level school certificate (for direct entry) or promotion from copy-typist grade plus:	School certificate at "O" Level with passes in Business Education subjects	
Grade 3	Shorthand 80 w.p.m./typing 30 w.p.m.	Grade eliminated	
Grade 2	Shorthand 100 w.p.m./typing 40 w.p.m.	Shorthand 80 w.p.m./typing 40 w.p.m.	
Grade 1	Shorthand 120 w.p.m./typing 50 w.p.m.	Shorthand 100 w.p.m./typing 50 w.p.m.	
<i>Personal secretaries</i>	Four years of secondary — "O" level school certificate plus:	School certificate at "A" Level with passes in Business subjects or Diploma in Secretarial Admin.	
Grade II	Shorthand 120 w.p.m./typing 50 w.p.m., experience in minor executive duties	Shorthand 120 w.p.m./typing 50 w.p.m.	
Grade I	Shorthand 120 w.p.m./typing 50 w.p.m., executive ability	Minimum 4 years at Grade II	

SOURCE: Pratt Commission Report, 1973 36-39; Personnel Circular No 1 of 1976, Personnel Circular No 3 of 1977.

Examination and then in 1977 to four years of secondary school with EACE "O" levels in business subjects. Minimum academic credentials for shorthand-typists and personal secretaries since 1966 have been based on four years of secondary education with passes on the school-certificate examinations. The major exception, until 1976, was that copy-typists who acquired shorthand skills could be promoted in grade without further academic qualifications.

Aside from the higher academic credentials required for copy-typists, the major change in minimum specifications for recruitment and advancement in secretarial grades since 1966 has been the emphasis on exposure to business education. For consideration for employment candidates for the lowest grade of copy-typist are expected to be in possession of the Elementary Certificate in Business Education in the following subjects: office practice, business English, and commerce, as well as to have typewriting skills of 30 words per minute. Candidates for the intermediate grade of copy-typists must obtain an Intermediate Group Certificate in Business Education in the same subjects or a pass in each as single subjects at stage I level of business education offered by the East African Examinations Council, while entry to the highest grade of copy-typists presupposes passes in the Advanced Group Certificate in Business Education. Shorthand-typists or stenographers similarly must have the relevant certificates in business education to be considered for employment. This new emphasis on credentials in business education reflects the introduction of business education in selected streams of some secondary schools and into the curriculum of secretarial colleges.

Interestingly, professional skills, i.e. typing and shorthand ability as measured by speeds and accuracy, have not been raised since 1966. In fact, the requirements for shorthand speeds among grade 2 and grade 3 shorthand-typists were reduced in 1976. Difficulties in finding suitable candidates probably contributed to these changes. General standards within the secretarial cadre in the civil service have been low, and, as mentioned previously, several commissions of inquiry have commented unfavourably on the standards of secretarial work within the civil service.

The policy in the secretarial service, as in the other sectors of the civil service, when raising educational qualifications has been to confirm all incumbents in their grades whether or not they meet the new specifications, but to require all new entrants to that grade to meet the new requirements. This means that many members of the secretarial service still have only primary-level schooling and relatively few, at least at the copy-typist grades, are secondary-school leavers with the requisite passes in business subjects. At any point in time staff at most grades in the civil service have a range of educational credentials depending on the year in which they were recruited and the requirements then in force. Presumably the better-educated staff have greater opportunities to advance in grade.

The secretarial service has provided some in-service training to upgrade qualifications of copy-typists, but most staff members advancing in grade

have done so through private studies. Several institutions, most notably Kenya Polytechnic, offer evening programmes, and secretarial staff are encouraged to attend such courses. Advancement in grade through improving qualifications was of course, a simpler procedure before 1976, when candidates merely had to raise their typing and/or shorthand skills and not offer certificates in business education as well. The civil service regularly holds examinations in order to test typing and shorthand speeds of prospective candidates.

Through time the civil service has Kenyanized the secretarial cadre and in the process lost many of the most experienced and skilled secretaries. This process undoubtedly has contributed to a temporary decline in professional standards, probably exacerbated by the difficulties the civil service has in attracting and retaining highly skilled workers. As indicated earlier, 93 per cent of the secretarial staff on pensionable or contract terms of service in 1963 were Europeans and Asians, most of whom presumably were not citizens. By March 1965 the secretarial and typing ranks were 38 per cent Africanized (Ministry of Economic Planning and Development, 1965: 34). Indigenization proceeded by 1972 to the point that 1,918 of the 2,072 secretarial workers employed by the Central Government, or 93 per cent of the total, were citizens. In 1976 only 22 of the 3,062 members of the secretarial service were non-citizens. In contrast, the private sector still employed 20 per cent non-citizen secretaries as recently as 1972, and other parts of the public sector also have a greater reliance on non-citizens: in 1976 six per cent of all secretaries, stenographers, and typists in the public sector were non-citizens (CBS: unpub. C).

Table 22 describes the distribution of secretarial staff in five ministries in 1975-1976 and 1976-1977 based on the official establishment, not necessarily the actual numbers employed. As it indicates, there were about twice as many copy-typists employed as shorthand-typists, and relatively few positions as personal secretaries. Moreover, the greatest rate of increase between 1975-1976 and 1976-1977 came at the copy-typist level. This organization of the secretarial cadre obviously offers relatively limited opportunities for advancement. Also, beyond serving as the personal secretary for a higher-ranking civil servant or minister, talented and ambitious stenographers and personal secretaries have few other prospects. A few may become pool supervisors, but there are no regular channels for promotion to the executive or semi-professional grades.

Most secretarial workers are women. The sex distribution of Kenyan citizens in the public sector in 1976, presented in Table 1, indicates that the secretarial cadre is the most feminized of all occupational groupings. In 1976 92 per cent of all citizen secretarial staff in the public sector and 91 per cent of the total secretarial cadre in the Central Government Service were female (CBS: unpub. C). In terms of absolute numbers, only teaching, unskilled and skilled labour employed more females in the public sector. In many African countries males are better represented among secretarial workers, but

TABLE 22. The establishment of secretarial staff in five ministries, 1975-76 and 1976-77

	1975/76	1976/77
<i>Ministry of Health</i>		
Copy-typist	69	101
Shorthand-typist	41	44
Personal secretary	6	6
<i>Ministry of Housing and Social Services</i>		
Copy-typist	55	56
Shorthand-typist	15	15
Personal secretary	4	4
<i>Ministry of Finance and Planning</i>		
Copy-typist	153	177
Shorthand-typist	96	121
Personal secretary	16	16
<i>Ministry of Education</i>		
Copy-typist	111	124
Shorthand-typist	56	56
Personal secretary	12	12
<i>Ministry of Labour</i>		
Copy-typist	68	80
Shorthand-typist	39	42
Personal secretary	7	8
<i>Total</i>		
Copy-typist	456	538
Shorthand-typist	247	278
Personal secretary	45	46

SOURCE Government of Kenya, 1976. 1976/1977 Estimate of Recurrent Expenditure.

the early reliance on non-citizen females in Kenya appears to have sex-stereotyped secretarial work as a profession appropriate for women. Kenya's colonial heritage as a settler society brought a larger number of European and Asian women to live permanently than in other African territories, excepting Rhodesia and South Africa, and consequently prompted the greater involvement of these women in the labour force. In other colonial dependencies in Africa, the few European women resident there had accompanied their husbands, who generally were posted on short-term assignments, and these women therefore had less inclination to seek employment. Therefore, secretaries had to be trained locally at an earlier point in most African colonies than in Kenya, and, as in the case of clerks, they were drawn chiefly from male school-leavers since few African women were sufficiently educated until the eve of independence. When the Kenya Government embarked upon the local training of secretarial cadre after independence, by recruiting only female students for the two Government secretarial colleges and then hiring the graduates of these institutions into the public sector, the Government contributed to the further feminization of the profession.

Table 23 describes the evolving salary structure for specific grades of secretarial workers. In contrast with the teaching profession, where the highest rate of salary increase has come at the lower grades, among the secretarial cadre, personal secretaries, the highest grade, have had the greatest and copy-typists, the lowest grade, the lowest percentage increase. This has occurred despite the fact that during the period under review qualifications for personal secretaries have remained stable while copy-typists have changed from primary- to secondary-level academic qualifications. Quite likely, the salary scales reflect the scarcity of highly skilled secretaries and abundance of semi-skilled copy-typists.

TABLE 23. Salary scales for secretaries (K£ per annum).

	1964	1968	1976	1977
<i>Copy-typists</i>		252- 378		
Grade 3	236- 268		276-399	324- 489
Grade 2	284- 316		369- 531	399- 594
Grade 1	332- 354		489- 690	531- 744
<i>Shorthand-typists</i>		429- 825		
Grade 3	380- 440			
Grade 2	460- 520		594- 834	642- 900
Grade 1	540- 600		804-1 086	864-1 212
<i>Personal secretaries</i>		864-1 179		
Grade II	620- 820		1 086-1 446	1 170-1 554
Grade I	850-1 060		1 350-1 794	1 446-1 930

SOURCE: Pratt Report, 1963 133; Millar-Craig Report, 1967 124; Personnel Circular No 1 of 1976; Personnel Circular No 8 of 1977.

Despite these salary increases, the civil service has remained uncompetitive with either the rest of the public sector or the private sector in wages for secretarial workers. The differentials are attested to by the figures in Table 24. There was little discrepancy in the salaries earned by the relatively few males in the profession, irrespective of the sector in which they were employed. However, female secretaries, who constitute the vast majority of the occupation, in 1976, earned 19 per cent more in the public sector as a whole and 63 per cent more in the private sector than in the Central Government Service. With the exception of Central Government Service, where in 1976 males earned more than females, women secretaries commanded higher salaries than male secretarial workers. The greatest difference occurred in the private sector. Presumably the femininization of secretarial work has given women secretaries the edge in experience, commitment, and qualifications and this accounts for their higher earnings than males in the public and private sectors.

TABLE 24. Comparison of earnings for secretarial workers by sex and sector, 1972 and 1976

Year	Average wage received for month of June in shillings					
	Total Public sector		Central Government		Private sector	
	Males	Females	Males	Females	Males	Females
1972	784	864	645	661	774	1 270
1976	1 055	1 260	1 181	1 058	1 289	1 722

SOURCE Central Bureau of Statistics. Labour Enumeration for 1972 and 1976

Clerical cadre

Clerks comprise one of the largest occupational groupings within the public sector, second only to teachers among white-collar workers. As Table 1 indicates, in 1976 there were 28,742 clerical workers in the public sector as compared with 20,582 in the private sector. Of the agencies in the public sector, the Central Government alone employed 5,189 clerks in that year. According to the current clerical scheme of service enacted in 1973, the tasks it is anticipated that clerks will perform include compiling statistical records or specific sources of information, making calculations from financial or statistical records, accounting transactions, maintaining stock records, and writing simple letters (Personnel Circular No. 10 of 1973).

At the time of independence the clerical ranks had a higher representation of Africans than many other parts of the civil service. Of the 3,141 clerks on pensionable terms, 2,033 or 65 per cent were Africans. Africans constituted 62 per cent of all clerical workers on pensionable, contract, and clerical terms of service (Kenya Government, 1963). In 1965 the clerical service was 66 per cent Africanized (Ministry of Economic Planning and Development, 1965: 34). By 1976 the Central Government employed only 12 non-citizen clerks out of a total of 14,687, and the public sector employed 531 non-citizens out of 29,273 clerks, or somewhat less than two per cent of the total.

The clerical service, as Table 25 shows, generally has been organized into four grades. However, the 1966 scheme ranged from junior clerical to senior clerical officer appointments, with a common establishment for all but the senior clerical officers, whereas the 1973 reorganization dropped the grade of junior clerical officer and added the position of executive assistant. Under the 1973 scheme clerical officers and higher clerical officers together with the obsolete positions of junior clerical officers form a common establishment. This change, which was more than nominal, upgraded the functions of the clerical office cadre and left much of the simpler and more routine clerical work to the subordinate service.

TABLE 25. Minimum qualifications for clerical office cadre

	1966 (Service established)	1973
Junior clerical officer	Promotion from unestablished service after passing Junior Clerical exam or direct entry after 2 years secondary schooling and passing entry exam	No further appointments
Clerical officer	Promotion after passing clerical exam or Direct entry 2 years of secondary education and passing entrance exam	School Certificate "O" level Higher point of entry for "A" level
Higher clerical officer	Promotion	Four years service plus a pass in Proficiency Examination for clerical officers (general paper, Civil Service Regulation, Clerical Procedures).
Senior clerical officer	Promotion	Promotion after minimum of 5 years clerical experience, at least 2 as higher clerical officer
Executive assistant	Grade not yet established	Promotion after minimum of 8 years clerical experience, at least 3 as senior clerical officer

SOURCE: Personnel Circular No. 3 of 1966; Personnel Circular No. 4 of 1973; Personnel Circular No. 10 of 1973

This upgrading of tasks of the clerical office cadre has been an ongoing process, at least partially prompted by the raising of the minimum educational requirements for appointment to the service. Prior to 1966 the clerical service consisted of five grades, with the post of ungraded clerk at the bottom of the scale. Virtually all ungraded clerks and most junior clerks began their careers as members of the subordinate service, many of whom had less than the full primary education. The 1966 redesignation of grades specified that promotions from the subordinate service were contingent upon passing a junior clerical examination set by the Ministry of Education, which tested written English at the level of the primary-school leaving exam and the candidate's ability to understand simple clerical duties. Officers who had already passed the primary-school leaving examination or its equivalent were exempted. Although it was intended that the post of junior clerical officer would be filled by promotion of ungraded clerks and members of the subordinate service, the 1966 scheme did provide for direct appointment under exceptional circumstances. Direct entry candidates, in contrast with promotions from within the Government Service, had to complete four years of secondary schooling and possess at least the General Certificate of Education ("O" levels). Recruits entering the clerical office cadre with the Higher School

Certificate ("A" levels) began in the same grade but at a higher point in the salary scale than officers with the General Certificate of Education (Personnel Circular No. 3 of 1966).

By 1973, with the elimination of both ungraded clerks and junior clerical officer grades, the expectation was that recruits would have completed a minimum of four years of secondary schooling with a pass on the East African School Certificate, the successor examination to the General Certificate of Education. Alternatively, candidates with sixth-form secondary schooling and the East African Advanced Certificate of Education, the successor to the Higher School Certificate, would enter in the same grade, but at a higher point in the salary scale, as under the 1966 scheme. Although little was said about the manner of recruitment in the 1973 personnel circular, ministries have tended since then to recruit from outside the service in order to meet the educational criteria. Many ministries have sufficient applications from secondary-school leavers and they do not have to advertise vacancies to find suitable candidates.

An examination of the files from one ministry, the Ministry of Finance and Planning, confirms that recent recruits to the clerical office cadre tend to be direct-entry school-leavers with EACE. In 1976/77 the Ministry of Finance and Planning had an assigned establishment of 845 clerical and senior clerical officers as against 830 in 1975/76 (Government of Kenya, 1976). The majority of clerical officers appointed in the course of 1977 were either selected for posts in the income-tax department or were to serve as field enumerators. Of the 29 new recruits to the income-tax department only three, two males and one female, had the EAACE, and the one woman promptly resigned to accept admission to Kenya Polytechnic Institute for further training. All but five of the other 26 recruits, nine females and 17 males, had division-three passes on the EACE, and only one of the remaining five had a division-one. In September 1977, 13 candidates were recruited as regular field enumerators, all of whom were males in keeping with Ministry policy. Qualifications of these new staff were better than for the intake into the income-tax department, possibly because the starting annual salary was £510 while the income-tax department offered £399 per annum to EACE school-leavers. Again virtually all, 11 of the 13, had completed four rather than six years of secondary schooling. However, in this group ten had division-two and one had division-one results. The Ministry also recruited temporary field enumerators, primarily females, to administer the Kenya Fertility Survey. Constraints related to attracting suitable candidates for short-term appointments and finding eligible females fluent in the languages to be employed resulted in lower credentials than either of the other two groups of recruits. Even so, all of the 11 females whose files were available had the EACE. The major difference was that several, four of the 11, had division-four scores, and were therefore given subordinate staff rather than clerical appointments at a lower salary, £246, even though they would perform the same type of work as the others. The appointees with division-two results, of whom there were two,

and division-three scores, of which there were five, were to earn £399.

This distribution of qualifications of recruits suggests that candidates with division-one results on the EACE and with EAACE passes still have sufficiently good opportunities for higher education, career-training programmes, or other types of employment that they are not actively seeking clerical appointments. Alternatively, the failure to recruit more sixth-form leavers with EAACE could be due to the reluctance of the Government to pay the higher salaries that six-form leavers command. Whichever of these explanations is more salient, it seems likely that most new clerical officers in the foreseeable future will continue to have the EACE rather than the EAACE.

In the clerical office cadre departmental examinations have been an important hurdle for entrance or promotion. Under the 1966 scheme of service a written clerical examination was organized each year by the Public Service Commission, consisting of four papers at approximately the School Certificate level: English language, math, general knowledge (for outside candidates only), and Government clerical procedures (for candidates within the service). To be eligible for appointment as a regular clerical officer, candidates had to pass all three subjects at one sitting. The clerical examination was open to serving officers with at least two years' secondary-school education, candidates from outside the service with at least two years of secondary-school education (although four years with "O" levels was preferred), and serving junior clerical officers with at least two years of service but without necessarily having two years of secondary schooling (Personnel Circular No. 3 of 1966). In 1959 only 59 of 1,392 entries, or 4 per cent, passed (Public Service Commission, 1973: 7). In 1972, the last year during which the Government Clerical Officers' Examination was held, 509 of the 2,297 entries, or 22 per cent, passed (Public Service Commission, 1974: 5). Presumably, with such a low passing rate, most of those who were successful probably had at least two years of secondary schooling.

The department proficiency examination replacing the Government Clerical Examination in 1973 is required to enable a candidate to be considered for promotion to the higher clerical officer grade and is geared to a much more professional and sophisticated level than the former clerical exam. The Proficiency Examination for Clerical Officers set in 1973 consists of three parts: a general paper, a paper on civil service regulations, and a third paper on clerical procedures. All three are weighted equally and candidates must pass all three simultaneously to be eligible for promotion when vacancies occur. The general paper tests English comprehension and expression, knowledge of the organization and functions of government at all levels and including the Kenya Constitution, familiarity with current affairs, and understanding of elementary economics. Part II on civil service regulations deals with the various codes, including Public Service Commission Regulations, the Kenya Government Official Manual, pension regulations, and personnel, Treasury, and supplies branch circulars. The paper on clerical procedures has a compul-

sory section dealing with office practices and business calculations and an optional portion from which candidates may select a specialization in accounts, stores, personnel, or general office services. Clerks wishing to advance in grade study for this examination privately (Personnel Circular No. 10 of 1973). Although the passing rate initially was quite low, by 1976 somewhat more than half of the 980 takers were successful (Government Files).

Although passing the Proficiency Examination for Clerical Officers is a necessary but not sufficient condition for promotion to senior clerical officer grade, a perusal of personnel files indicates that ministries attempt to provide such advancement for successful candidates. The existence of a common establishment in the two grades of clerical and senior clerical officer facilitates such promotions. Of the entrants from the Ministry of Finance and Planning who passed the proficiency examination in 1976 and were recommended for promotion, all had completed the EACE and several had been on departmental upgrading courses. A few had also studied as private candidates courses in bookkeeping or had sat privately for the EAACE in one or two subjects.

Senior clerical officers, of whom there are relatively few in the civil service, as shown in Table 26, are recruited from serving officers with a minimum of

TABLE 26. The establishment of clerical staff in five ministries. 1975/76 and 1976/77

	1975/76	1976/77
<i>Ministry of Health</i>	598	777
Clerical officer (all types) ¹	3	15
Senior clerical officer	1	1
Executive assistant		
<i>Ministry of Education</i>	737	761
Clerical officer ¹	18	18
Senior clerical officer	—	—
Executive assistant		
<i>Ministry of Housing and Social Services</i>	104	107
Clerical officer ¹	7	7
Senior clerical officer	6	7
Executive assistant		
<i>Ministry of Finance and Planning</i>	753	769
Clerical officer ¹	77	76
Senior clerical officer	19	20
Executive assistant		
<i>Ministry of Labour</i>	313	370
Clerical officer ¹	2	5
Senior clerical officer	26	26
Executive assistant		

¹ This category includes clerical and higher clerical officers which have a common establishment.

SOURCE Government of Kenya, 1976. 1976/1977 Estimates of Recurrent Expenditure

five years of clerical experience, at least two as higher clerical officers. The Civil Service Commission advertises such posts and candidates from outside the relevant ministry may apply. Sometimes, however, qualifications are so set that candidates within the ministry with the vacancy have an advantage. In recent years such advertisements frequently specify that candidates have attended particular upgrading courses or have passed professional examinations in fields such as accountancy, supplies, or personnel management.

In contrast with the secretarial service, which has been compartmentalized, the clerical service has provided for mobility: at least until 1973 it recruited from the subordinate service and in turn it has enabled some clerks to move into middle-level management or after some further in-service training into specialized services, such as accountancy and personnel work. The highest grade in the clerical cadre, executive assistant, is basically equivalent to the lowest in the executive scale, and as such has provided a transition point. Executive assistants are assigned to specific specialities, such as accountancy, supplies, and personnel work. Clerical workers so specialized are sometimes given the chance to attend training programmes at the Kenya Institute for Administration that will enable them to qualify as full professionals within the technical services or to enter the executive service.

Although the clerical service provides in principle a means of upward mobility, opportunities for advancement are in fact quite restricted. As Table 26 shows, the structure of the civil service is pyramidal. The large base composed of general clerical officers narrows considerably at the senior clerical officer and executive officer ranks. In 1976 in the civil service there were nearly four times as many clerical workers as middle-level management personnel, and many of these middle-level executives were probably young and unlikely to retire or be promoted upwards in the foreseeable future (CBS: unpub. C). In-service training also remains the exception rather than the norm. As of July 1971, some 2,000 of the 11,000 clerical staff in the civil service had attended clerical courses at government training institutions, and, of the remaining 9,000, few had received effective on-the-job instructions (Wamalwa, 1972: 17). On-the-job instruction has become more regularized, but relatively few clerks have had the chance to upgrade their skills through attending a course. Files of the Ministry of Finance and Planning reveal that between 1971 and 1977 some 30 clerks, out of an establishment of about 700 to 800, were sent on courses of various types at governmental training institutions.

The practice in Kenya, as Tables 1 and 2 indicate, has been to recruit males for most clerical positions in both the private and public sectors. Although women's representation in the clerical ranks has increased over time, females constituted only ten per cent of clerical workers in 1976. In that year in the public sector as a whole, women accounted for nine per cent of all clerical workers, citizens and non-citizens, and in the Central Government Service eight per cent of the clerical cadre (CBS, unpub. C). The tradition of employing male clerks apparently stems from the colonial heritage, during

which time clerical work was sex-stereotyped as appropriately male, as in most colonial dependencies. The implicit vocational character of the colonial educational system, designed as it was to provide clerks and other lower-echelon workers for the administration and private companies, disadvantaged women: since females were not considered suitable candidates for clerical work, few of them were educated. Women's difficulties in moving into middle-level executive positions in the public sector reflect the tradition of upward mobility from the predominantly male clerical service.

Table 27 describes the evolving salary structure for the clerical cadre. It is more difficult to plot trends among clerical officers than most other services because of the restructuring in grades that occurred between 1966 and 1977. Among the three grades which have remained constant, clerical, higher clerical, and senior clerical officers, the percentage of increase in starting salaries favours clerical officers. Clerical workers in the public sector, in contrast with most occupational groups, compare favourably in earnings with private-sector employees. As in the case of secretarial staff, Table 28 shows that clerical workers in Central Government employment earn less than in other parts of the public sector and thus also receive a lower wage than private-sector clerks. In the public sector male clerks earned a slightly higher average wage than female clerks. The disparity in salaries for the month of June in 1976 was

TABLE 27. Salary scales for clerical officers (K£ per annum).

	1966	1973	1977
Junior clerical officer	163-228	276-417	399-594
Clerical officer	236-364	399-573	531-744
Higher clerical officer	380-500	489-690	642-900
Senior clerical officer	520-620	690-972	864-1 212
Executive assistant			

SOURCE: Personnel Circular No. 3 of 1966; Personnel Circular No. 4 of 1973; Personnel Circular No. 8 of 1977

TABLE 28. Comparison of earnings for clerical workers by sector and sex, 1972 and 1976.

Year	Average wage received for month of June in shillings					
	Total public sector		Central Government		Private sector	
	Males	Females	Males	Females	Males	Females
1972	707	627	556	537	799	917
1976	1 127	1 113	1 067	966	1 104	1 148

SOURCE: Central Bureau of Statistics, Labour Enumeration for 1972 and 1975

greater in the Central Government than in the public sector as a whole. In the private sector, females had the edge over males. It is difficult to account for these trends.

Middle-level management

The middle-level management classification within the civil service is relatively amorphous and is based on job-group designation rather than on task or functional assignment. In a civil service structure of 16 groups labelled A through Q (omitting I), middle-level management incorporates the members of the H through K job-groups. As such it includes among its ranks executive officials; personnel officers; accountants; the first two grades of planning officers; economists, and statisticians; auditors and assessors. This section of the paper will deal with three of the main services assigned to this classification: the executive service, the accounting service, and the personnel officers' service. The cut-off for middle-level management excludes all clerical grades, including the highest, but makes personnel secretaries eligible for inclusion.

At the time of independence the middle-level management grouping consisted primarily of generalist executive officials, of whom there were two types, executive class and department executive class. In 1963 the Central Government employed 954 executive-class officials, most of whom were Asians, and 746 department-executive-class officials, who were relatively equally divided among Europeans, Asians, and Africans (Kenya Government, 1963). By 1965 the executive grade was 57 per cent Africanized (Ministry of Economic Planning and Development, 1965: 34). In 1972 only 149 of 2,372 middle-level executives in Central Government employment, or six per cent, were non-citizens. However, the representation of non-citizens then rose again over the next four years to 427 of 4,400, or 10 per cent. This apparent increase probably relates to the changing character of the middle-level management classification and the trend toward specialization and professionalization.

An analysis of the distribution of executive officials, accountants, and personnel officers in Central Government ministries in 1977, drawn from the official directory of staff, the results of which are presented in Table 29, reveals the growth of specialized personnel and the decrease in generalists in the middle-level management group. The total number of executive officials, 59, is less than one-third as many as the number of accountants and personnel officers employed by the ministries in Nairobi. Although the directory omits field staff of the ministries posted to the provinces, it seems unlikely that the nature of middle-management personnel outside Nairobi differs significantly. Of the ministries, the Ministry of Law (the Attorney General's Office) employs the largest contingent of executive-service officers, 18 in all. The job descriptions of the 59 executive officers vary considerably from ministry to ministry. Much of their work relates to supervising clerks, typing pools, and subordinate staff, controlling records and registry files, and proces-

sing papers. A very few still have some accounting and personnel functions.

TABLE 29. Distribution of selected grades of middle-level management in Central Government ministries, 1977

Occupational grouping	Number of males	Number of females	Number of vacancies	Total
Executive officer ¹	12	—	1	13
Executive officer II	23	2	2	27
Executive officer I	14	—	1	15
Senior executive officer	3	—	1	4
Total	52	2	5	59
Accountant II	34	1	5	40
Accountant I	25	—	4	29
Senior accountant	18	1	3	22
Chief accountant	9	—	—	9
Head of service	1	—	—	1
Total	87	2	12	101
Personnel officer II	33	5	—	38
Personnel officer I	19	7	—	26
Senior personnel officer	11	—	1	12
Chief personnel officer	9	—	—	9
Total	72	12	1	85

1. No grade designation

SOURCE: President's office, *Directory of the Republic of Kenya*, 1977

A reorganization of the clerical, personnel officer, and accountants schemes of service, effected through personnel circulars in 1973, attests to the growing specialization and professionalization within the middle-level management ranks. In that year the lowest grade of the accounting and personnel officers' services were eliminated. Posts previously designated as personnel officer III and accountant II, the second lowest grades, were reassigned to the clerical officers service. Henceforth the highest grade of clerical office cadre, with the title of executive assistant, was to undertake specialized duties of a more complex nature, including much of the simpler and more routine work formerly performed by the two lowest grades of accountants and personnel officers (Personnel Circulars Nos. 3, 4, and 5 of 1973). The failure of the Directorate of Personnel Management to issue a new scheme of service for the executive officers corps at the same time suggests its declining role. However, in recent years no further appointments seem to have been made to

the lower executive grades and some clerical staff at the executive assistant grade have been assigned office management functions, much as in the reorganization of the personnel and accounting cadre.

The new schemes of service instituted in 1973 and the minimum educational qualifications specified for the higher grades of executive officers under the still operative 1966 scheme of service, which are outlined in Table 30, require that middle-level managers be either direct-entrant recruits with university degrees or upgraded clerical officers, presumably with a secondary-school education, who have passed relevant professional examinations in their speciality. In the case of personnel officers, as indicated in Table 31, candidates must have passed the Certified Public Secretary (Kenya) examination with the personnel management option: Part I to qualify for Personnel Officer Grade II and Part II to qualify for Personnel Officer Grade I. To be promoted to accountant grade II, clerical cadre, as shown in Table 32, must have passed Part I of the Certified Public Accountant (Kenya) examination with the

TABLE 30. Minimum qualifications for executive service.

	1964	1966
Executive officer, training grade	Promotion from clerical grades. Written exam including "O" Level Maths and English, passed Executive officer's entrance exam. or Direct entry — School Certificate with 5 passes "O" level plus open exam and interview.	Promotion from clerical grades or Higher School Certificate "A" level
Executive officer, grade IV	One year at training grade for those promoted from clerical grades. Three years at training grade for direct entry plus passed Executive officer's entrance exam.	Grade eliminated
Executive officer, grade III	Promotion from grade IV	Grade redesignated
Executive officer, grade II	Promotion from grade III	Recognised university degree or Promotion from clerical cadre
Executive officer, grade I	Promotion from grade II	Promotion
Chief executive officer	Promotion from grade I	Promotion

SOURCE Pratt Commission 1963: 40-43; Personnel Circular No. 1 of 1966.

TABLE 31. Minimum qualifications for personnel officers.

1966		1973	
	In-service	Direct entry	
	In-service	Direct entry	
Personnel officer, grade IV	Selected for training in personnel management with pass on government Personnel officers' examination No. 1	School Certificate Division II ("O" levels) with credit in English language. Plus 9 months pre-service training and pass on government Personnel officers' examination no. 1	Grade eliminated
Personnel officer, grade III	Completed at least 2 years in grade IV rank		Grade reassigned to scheme of clerical cadre
Personnel officer, grade II	Minimum of 3 years satisfactory experience and pass on government personnel officers' exam No. 2	University degree preferably in Social Science or Industrial Relations or passed Intermediate Exam of recognized professional association	Serving officers in clerical cadre with at least 2 years experience in personnel work who have passed Part I of Certified Public Secretary (Kenya) exam with personnel management option
Personnel officer, grade I	Minimum of 5 years satisfactory experience, at least 2 as Personnel officer, grade II.	Direct entry qualifications as for Grade II plus pass on Final Exam of recognized professional association or considerable experience in field	Two years experience at Grade II level and passed Part II of Cert. Public Secretary (Kenya) Exam with personnel management option
Senior personnel officer	Minimum of 7 years satisfactory experience, 2 of which in grade I	Appointments made only in exceptional circumstances	Minimum of 3 years experience at Grade I
Chief personnel officer	Minimum of 10 years experience or university degree plus 7 years		Minimum of 3 years experience at Chief personnel officer

TABLE 32. Minimum qualification for accountants.

	1966	1973
Accountant, grade IV	Direct entry — School Certificate with 4 passes at "O" level of which one must be in math; one year pre-service training after selection with a pass in end of course exam.	Grade abolished
Accountant, grade III	Pass in government Accounts exam No. 1; completed at least one year in Grade IV. Direct entry — first level in professional exams.	Grade reassigned to scheme of clerical cadre as Executive accounts assistant
Accountant, grade II	Pass in government Accounts exam No. 2; 3 years' experience. Direct entry — university degree with accountancy as a major field or intermediate professional certification	Direct entry — Bachelor of Commerce. Degree or acceptable professional accountancy qualification or clerical cadre who passed Part I of Certified Public Accountants (Kenya) exam with Central Government stream
Accountant, grade I	Five years' experience or direct entry qualifications for Accountancy II plus two years' experience. Direct entry — university degree with accountancy as major field; pass in final exams of a professional body.	Two years' experience at Grade II plus passed Part II of CPA (Kenya) exam
Senior accountant	7 years' experience or a university degree and 4 years' experience or final examinations of professional body plus 2 years' experience	Three years' experience at Grade I plus professional qualification
Chief accountant	10 years' accountancy experience or a university degree with accountancy as a major field of study plus 4 years' experience, or the final examinations of a recognized professional body plus 2 years' experience	Three years' experience at Senior Accountant Grade plus professional qualification

SOURCE: Personnel Circular No. 32 of 1966; Personnel Circular No. 3 of 1973.

Central Government stream and then to be advanced further to accountant grade I must have passed Part II. Both the Certified Public Secretary and the Certified Public Accountants examinations are geared to a higher professional level than the examinations they replaced. It is generally anticipated that direct entry to both the accountants' and the personnel officers' services will

be limited to grade II. One exception would be the case of executive officers gaining professional training who could be appointed to grade I.

Although there appear to be a sufficient number of trained university graduates available to fill vacancies, particularly in the case of personnel officers' and executive officers' services since they do not require subject specializations, the civil service has not accorded university graduates priority over upgraded staff. Current recruitment policy for personnel officers, for instance, attempts to maintain a balance between the two groups. Moreover, the slow rate of expansion of middle-level management staff means that most officers currently holding these positions have done so for several years and therefore would be unlikely to be university graduates.

The policy of upgrading clerical staff to fill specialized middle-level management positions has required the civil service to offer various types of in-service training programmes to impart the requisite skills. Under the 1966 scheme of service for personnel officers, the Directorate of Personnel Management offered a nine-months pre-service course to prepare candidates for direct entry to personnel officer grade IV. A three-months in-service course, geared for clerical officers of high potential, enabled these serving officers to acquire the qualifications for entrance into the executive corps. Both the nine-months pre-service and three-months in-service course examinations culminated in the Government Personnel Officers' Examination Number 1. A five-months advanced personnel-management course for members of the executive service, who had successfully completed the Government Personnel Officers' Examination Number 1, and under exceptional circumstances for serving clerical officers, who had shown outstanding ability in the personnel-management course even though they had not been admitted to the executive service, enabled them to obtain the qualifications for appointment to more senior personnel positions. The Government also paid for evening or part-time courses mounted at the Kenya Polytechnic and the University of Nairobi leading up to examinations of approved professional bodies (Personnel Circular No. 31 of 1966). The 1973 scheme of service does not provide comparable information on existing in-service programmes. The Kenya Institute of Administration has courses for upgrading clerical staff and junior personnel officers that prepare candidates for Parts I and II respectively of the Certified Public Secretary (Kenya) examinations.

The 1966 scheme of service for accountancy grades similarly mentioned a direct entrants' course of one years' duration for candidates selected by the Public Service Commission as accountant grade IV, who then were school-certificate holders with four "O" levels. The in-service programme had a junior accounts course of three months to enable competent and ambitious clerical officers to acquire the qualifications for entry into accountancy grades and an advanced accounts course of seven months geared for members of the accountancy grades or clerical officers who had successfully completed the junior accounts course to obtain the qualifications necessary for appointment to more senior posts (Personnel Circular No. 32 of 1966). As in the case of

personnel officers, the higher educational credentials of direct-entry recruits have made a long pre-service course unnecessary. The new accountancy courses offered at the Government Training Institute and the Kenya Institute for Administration prepare candidates for various stages of the Certified Public Accountants (Kenya) examination.

The change in composition in the middle-level management cadre makes it difficult to compare data on this occupational grouping over time in the civil service. It also provides problems in comparing middle-level managers in the public and private sectors. The annual enumeration of employment and earnings in the modern sector and the middle- and high-level management surveys conducted by the Central Bureau of Statistics do not specify a definition of middle-level management that eliminates classification ambiguities. Such designations therefore are left primarily to the employers' discretion. Within the civil service some uniformity is achieved by basing the middle-level management category on job groupings, but in the private sector and in other parts of the public sector it depends entirely on the judgement of the employer completing the questionnaire. Therefore there may be considerable discrepancy both within the private and public sectors and between them.

Fragmentary data indicate that government executive officers in 1972 were better educated than other middle-level managers and that in 1976 male middle-level managers in the civil service particularly and the public sector generally were better paid than in the private sector. However, as indicated above, these data may reflect differences in classification. The survey of middle- and high-level manpower of 1972 showed that most government executive officials had a secondary-level education: 3 per cent had primary secondary schooling. In contrast, other middle-level managers newly recruited or promoted in 1971 were less well-educated; 36 per cent had a primary education, 25 per cent a lower-secondary, and 39 per cent a higher-secondary schooling (CBS, unpub. A: 58). Table 33, which sets forth the earnings for

TABLE 33. Comparison of earnings for middle-level executives by sex and sector, 1972 and 1976

Year	Average wage received for month of June in shillings					
	Total public sector		Central Government		Private sector	
	Males	Females	Males	Females	Males	Females
1972	1 915	1 461	1 845	1 651	2 359	1 692
1976	3 081	2 074	3 290	2 534	2 889	2 249

SOURCE Central Bureau of Statistics, Labour Enumeration for 1972 and 1976

middle-level executives by sex and sector, shows that in 1976 the public sector provided higher salaries than the private sector. The average wage reported for the Central Government, though, very likely results from some error in processing data, because it exceeds the salary scales set down for the Central Government at this level, as listed in Tables 34, 35, and 36.

TABLE 34. Salary scales for executive officers (K£ per annum)

	1964	1968	1972	1977
Executive officer, training grade	380- 420	396- 510	384- 573	
Executive officer, grade IV	520- 640			
Executive officer, grade III	670- 820	678- 828	690- 972	
Executive officer, grade II	850-1 060	858-1 068	936-1 254	1 170-1 554
Executive officer, grade I	1 096-1 348	1 104-1 356	1 212-1 614	1 446-1 938
Chief executive officer	1 390-1 598	1 398-1 614	1 494-1 866	1 734-2 334

NOTE: This table was computed from data on changing salary scales at different grades on the assumption that the relevant classification of grades remained constant.

SOURCE: Pratt Report, 1963: 131; Ndegwa Report, 1971: 322-328, 333A; Personnel Circular No. 8 of 1977.

TABLE 35. Salary scales for accountants (K£ per annum).

	1966	1973	1977
Accountant, grade IV	520- 640	grade eliminated	
Accountant, grade III	670- 820	reassigned to scheme of clerical cadre	
	850-1 060	936-1 254	1 170-1 554
Accountant, grade II	1 096-1 348	1 212-1 614	1 446-1 938
Accountant, grade I	1 390-1 598	1 494-1 866	1 734-2 334
Senior accountant	1 839-1 989	2 154-2 334	2 154-2 820
Chief accountant			

SOURCE: Personnel Circular No. 32 of 1966; Personnel Circular No. 3 of 1973; Personnel Circular No. 8 of 1977

TABLE 36. Salary scales for personnel officers (K£ per annum).

	1966	1973	1977
Personnel officer, grade IV	520- 640	grade eliminated	
Personnel officer, grade III	670- 820	grade reassigned to clerical cadre	
Personnel officer, grade II	850-1 060	936-1 254	1 170-1 554
Personnel officer, grade I	1 096-1 348	1 212-1 614	1 446-1 930
Senior personnel officer	1 390-1 598	1 494-1 866	1 734-2 334
Chief personnel officer	1 839-1 989	1 866-2 334	2 154-2 820

SOURCE: Personnel Circular No 31 of 1966; Personnel Circular No 5 of 1973; Personnel Circular No 8 of 1977.

As mentioned previously, women's under-representation in the ranks of middle-level management results at least partially from their under-representation in the clerical ranks from which middle-level managers in the civil service traditionally have been drawn. In 1976 women were slightly better represented in the middle-level executive ranks of the public sector, constituting eight per cent of this group, than in the private sector, where they comprised seven per cent of the total. In the Central Government service the rate was equal to the private sector (CBS, unpub. C). Among the three groups of middle-level managers considered in this paper, the largest proportion and total number of women were in the personnel management field.

III. Conclusion

The basic tension between rapid educational growth and limited employment generation has reduced school-leavers' prospects for employment but it has not given rise to unlimited credential escalation in the public sector. The general trend has been to move toward a minimum requirement of four years of secondary schooling for the occupational groups considered in this paper, and in the process to displace primary-school and junior-secondary-school leavers from competition for such jobs. Examination results also have become more important, with a division III pass on the EACE necessary and a more important, with a division III pass on the EACE necessary and a division II result helpful to facilitate recruitment. Direct entrants to middle-level management grades, of which there are still relatively few, tend to be university graduates. Professional training, pre-service and in-service, increasingly has been emphasized for recruitment and advancement.

The existence of a surplus labour market does not appear to be the major determinant of the raising of educational qualifications. Various services have moved toward the requirement of secondary-level education with passes on the EACE ("O" level) examination at different rates, some before and some several years after the spectre of looming unemployment for school-leavers had become an actuality. Generally the policy has been to accord serving officers, who have been given the opportunity to upgrade their skills through in-service training or through studying as private candidates for further examinations, preference in employment promotions over the recruitment of new secondary-school leavers or university graduates, who have higher academic credentials. The secretarial and teaching services have benefited from the development of a surplus labour market, in that they were finally able to specify higher requirements without restructuring their salary scales, but the inability of less well educated staff to cope with job requirements was an important consideration.

In terms of assuring adequate performance, current specifications do not seem unreasonable, particularly since the middle-level occupational and management groups considered in this paper all must work primarily in English and undertake skilled work. During the period after independence, when the shortage of educated personnel depressed educational standards and

most clerks, teachers, secretaries, and possibly executive officers had less than a secondary education, several commissions and studies reported unfavourably on their ability to meet the demands of their jobs. Although there does not appear to be a precise correlation between educational attainment and performance, secondary education with further professional training would seem to provide a better prospect of candidates coping with English, bureaucratic routines, and activity methods of teaching. The reorganization of the middle-level management cadre, with the current emphasis on specialization and professionalization, places many demands on officers for which a secondary-level education may not even suffice.

It is likely that the majority of employees within specific grades of the civil service and teaching service do not meet the higher qualifications mandated during recent years. Therefore, the actual pace of raising the educational standards of most employees probably is a great deal slower than some of the tables in this paper imply. The recentness of Kenyanization and the limited expansion of most services suggest that many more employees were recruited under 1964 or 1966 criteria than 1975 or 1977 specifications. Whenever minimum educational credentials have been changed, the policy within the public sector has been to confirm all incumbents in their grades, regardless of their ability to meet the specifications, and to apply the new criteria only to future candidates. There has been no "job bumping" or replacement of existing staff with new recruits with higher educational attainment as the educational system has expanded. Unionization of both teachers and civil servants probably precluded doing so, but there is no evidence that the Kenyan Government ever considered such a programme. Thus personnel with very different qualifications coexist in many occupational groups and sometimes even at the same grade.

Many factors have weighed against efforts to raise educational credentials in response to the existence of a surplus job market. Financial considerations probably have been chief among them. The linkage between educational qualifications and entrance grades and salary scales assures that each effort to upgrade staff is very costly. In retrospect the policy of the civil service and teaching service seems to have been to improve overall qualifications of staff when the cost of such programmes could be minimized, either by changing the system for assigning grades, as in the case of the 1975 reforms in the teaching service, or by waiting sufficiently long so that secondary-school graduates will in desperation accept the range of pay scales formerly offered to less well-educated recruits, as in the case of the secretarial service.

Despite women's disadvantaged access to education, the existence of a surplus labour market has not adversely affected their position in the public sector. Women remain significantly under-represented in employment in the public sector, but have raised, not lowered, their proportional representation in recent years. Two mechanisms have protected their share of employment: a legacy of occupational segregation which has stereotyped certain jobs, particularly secretarial service, as appropriately female, and the utilization of

quotas in recruitment to teacher-training colleges that reserve about one-third of the places for females. Nevertheless, such policies when juxtaposed with women's inequalities in educational opportunity will militate against women moving significantly into occupational fields from which they have been under-represented or excluded in the past.

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Employment and training in metallurgical industries in the Department of the Bouches du Rhône, France

Jean Duplex, Olivier de Fontmagne
and Catherine Marry

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The authors are on the staff of the Laboratoire d'Economie et de Sociologie du Travail (LEST), Aix-en-Provence, France.

Introduction'

The theory on which this report is based consists of a number of hypotheses concerning industry, the system of education and their interdependence.

The first of these hypotheses concerns the importance of this interdependence between industry and the school in understanding their internal organisation, the output from their operations and the logic which this engenders. This means that we shall not be considering industry or the school as organisations in the accepted sense of the term, where one can study and develop theories "from inside" about what is going on. We shall, on the contrary, be considering them as institutions whose rules of operation and logic are both the result of their mutual relationships as well as factors conditioning their environment.

Emphasising the mutual interaction between these two types of institution—education and production—does not of course prevent one, from an analytical standpoint, from acknowledging that they have a certain degree of autonomy. The system of education would seem to be primarily a system for the socialisation and categorisation of workers, which, depending on the society and the period, is characterised by a particular combination of ways of acquiring knowledge and the social relationships within which this acquisition of knowledge occurs—selectivity based on streams, the hierarchy of diplomas and the functional organisation of schools. Industry is characterised by certain organisational features which determine the different job categories, their characteristics and their hierarchical or functional relationships. However, we consider that these facts of socialisation and these facts of organisation develop *within an already structured field*, which has to be described and its system explained before one can understand what is happening in industry and in education.

The aim of this research therefore is to analyse the structuration of the field in which the interdependence between facts of organisation and facts of socialisation is forged. This will also condition our long-term thinking and the construction of theoretical concepts to which such thinking may lead. And lastly, this

1. This introductory section is based upon a note by M. Maurice and J.-J. Silvestre.

aim will determine our empirical method of approach, which is primarily concerned with identifying the *processes by which this interdependence is forged* (e.g., patterns of occupational mobility in the case of the workers and social relationships in the case of industries or schools), *rather than* the assessment of situations or *flows* which cause this to modify (e.g., the output of diplomas, occupational structures, basic job characteristics, etc.).

This underlying theoretical orientation requires some explanations with regard to the hypotheses which we shall be formulating concerning diplomas and education on the one hand and concerning industry on the other.

As far as the *system of education* is concerned, our main concern is not to characterise diplomas as products supplied on a market but to identify the processes in the socialisation of workers which relate to their acquisition. This will necessarily mean that we shall be emphasising various phenomena which are ignored by more traditional methods of approach. This is particularly the case with regard to the importance assigned to the point in time at which a diploma is acquired (in the worker's educational career) and the place from which it is acquired (educational establishment) within the whole range of streams and processes of selection which characterise the educational system.

The part played by industry in workers' educational careers (apprenticeship, in-service training) as well as in the location of training establishments will need to be studied with particular attention as an important dimension of the forms of occupational socialisation which are principal factors in the acquisition of a diploma. This emphasis on defining the processes involved in the socialisation of workers also implies analysing the internal functioning of schools as well as the part played in this by their links with industry.

This approach to diplomas via the processes involved in the socialisation of workers justifies the importance assigned not only to the conditions in which they are produced, *but also to the conditions in which they are used within the system of production*. One of the essential hypotheses in our analysis of the relationships between education and employment is that the diploma viewed as an occupational space—and not as a product—is not really defined until one has determined the ways in which it is used in industry as well as the patterns of occupational mobility which generally apply to the workers who possess it. By defining the diploma on the basis of the conditions in which it is produced and used, one places it in the middle of the field in which the relationships between workers' socialisation and industry's organisation are structured.

This emphasis on the use of diplomas reflects our hypothesis that industry as an organisation plays an essential role in structuring the educational system, in determining its hierarchies (between diplomas and streams) and in the definition of its products. The emphasis placed on industry's role as a structuring agent does not exclude one from studying it as a social product. This however implies that one adopts a special approach to its own rules of internal structuration.

One has in fact to admit that, although industry creates a certain number of

norms or hierarchies which structure the educational system, the norms and hierarchies of the educational system will at the same time have a decisive influence on the internal rules of conduct within industry (workers' career patterns, promotion criteria) as well as on its organisational procedures. One has for example to consider that the slight esteem accorded to the professional value of diplomas on the labour market extends also to the processes producing these qualifications in the case of firms which put the accent on the job rather than on the worker, and on the progressive acquisition of specific know-how rather than on increasing his basic professional capacity. The origin of the emphasis placed on non-formal qualifications must be sought as much in the characteristics of industry as a social and historical product as in the shortcomings of the system of professional training.

This means that we have to give a special meaning to the notion of environment, different from the one traditionally adopted in the theory of organisations.

We consider that one has to develop an approach which considers industry as a product of its interdependence with the society in which it develops. And finally, one has to socialise the notions of technology and rationality of industry by incorporating them in the analysis of the interaction between the system of production and the system of education. This approach does not of course imply that one should deny the importance of technology in explaining forms of organisation, structures of qualification and the use of diplomas. It merely assumes that the relations between technology and organisation develop as the result of social processes specific to each society or to each "labour market"—processes whose dominant features have to be defined.

Nor indeed does this approach preclude one from investigating in as detailed a manner as possible what happens within industry as far as job classifications and promotions, hierarchical relationships or the use of qualifications are concerned. The main advantage to be gained by using this approach will be in the interpretation of these phenomena and in the continued reference to the interactions with the operation of the educational system which will constitute the underlying theme of this interpretation.

In this respect, our approach differs not only from an approach in terms of social reproduction marked by a certain degree of reductionism but also from an approach which tends to emphasise the determinisms of the social relationships of production in the analysis of job-function. In the one case, industry is almost entirely ignored, since the school is considered as the prime agent of social reproduction; in the other, however, it appears *a priori* as the main referent, allowing the school very little autonomy. By placing the emphasis on the interactions between "school" and "industry" we accord a relative autonomy to each institution, whilst stressing their joint social production.

The inductive research described in this report represents a first step in applying the theoretical and methodological concepts discussed in this introduction. These concepts operate in two indissociable ways.

First of all, by orienting the empirical analysis in such a way as not to limit the investigation to the creation of categories defined *a priori* by a theory, e.g., the theory of human capital. One has, therefore, to allow the research to retain its inductive character as an essential condition for the emergence of new conceptualisations and new questions.

Secondly, by placing the emphasis on gathering information likely to enrich our knowledge and our analysis of the field of interaction between the system of education and the system of production, i.e., between school and industry. This last requirement has practical consequences for our approach to the system of education or to the system of production and on the method used in making the transition from case studies to a more general analysis. We will in fact tend to emphasise the study of the *heterogeneities* and the *differences between types of school and types of industry* in producing diplomas or qualifications generally considered as identical in the more traditional approaches to the problem.

The study of this heterogeneity—in particular in the case of levels of training for skilled workers in industry—will be considered as a means of identifying different forms of relationship which develop, within the same geographic space, between types of industry and types of school and to link the nature of these relationships to the characteristics of these two institutions. This study should also enable us to make some progress towards a more general understanding of the output from the field in which these special relationships develop and in which—in the case of our research—professional qualifications are formed.

This method corresponds very closely to our hypothesis whereby the most significant categories embodied in the structure of the labour market are defined not by the levels or types of investment made by workers, but by the juxtaposition of different types of interaction between facts of socialisation¹ and facts of organisation. This method also reflects our concept of approaches in terms of segmentation or stratification of the labour market. In fact, with these approaches we feel there is a temptation to define the fields of interaction and describe the manner in which they articulate rather than an attempt to assess the barriers to the movement of human capital and to the creation of an investment by the workers. The conception which we have of market segmentation is therefore directly linked to the manner in which we approach the study of the educational system. This system *as such* is not considered essentially as the supplier of a segmented and socially selected labour force, but from the viewpoint of the relationships which these segments and this social selection have with the hierarchies and categories which develop within the system of production.

To conclude this description of the theory underlying this study, one should perhaps answer the question as to how this fits into the research on

1. Whether these take the form of diplomas or what is generally described as a non-formal qualification.

educational planning. It is obvious that to challenge the traditional conceptualisation in terms of the supply of training and the needs of employers is a way of making a critical appraisal of the relevance of the concept of educational planning rather than a means of improving the way this concept is applied. One can however consider that educational planning can no longer take as its prime objective that of organising an output of diplomas to suit needs created by an economic and technological advance which is linear and convergent whatever the country and whatever the society. One must bear in mind the fact that the activity of those responsible for education can progress only as the result of new knowledge concerning the relationships between the educational system and society and original methods of analysis which facilitate the process of building up such knowledge. As a result, one will be able progressively to define new types of indicators, capable of measuring the factors which structure the field of interaction between school and industry. It is in this context that we situate this methodological research.

I. The principles and methods adopted

The principles and methods adopted in this study are described briefly in the following sections.

A. The principles

(i) *The decision to adopt a simultaneous and reciprocal approach to school and industry*

Our primary hypothesis assumes interdependence or interaction between the conditions in which qualifications are produced and those in which they are used.

For the sake of clarity, it was decided that, in the study plan, we would deal separately with the conditions in which qualifications are acquired, i.e. analysis of the different training streams within the educational system, and those in which they are accepted or used within industrial organisations, i.e. analysis of the relative importance of professional training and diplomas in providing access to the hierarchy of jobs within the system of production.

However, as will be seen later, the underlying principle of interaction was the factor which determined the way in which our principal categories of analysis (e.g. zone, qualifications, sectors of activity) were broken down as well as the way in which our methodology was applied.

(ii) *Making allowance for the heterogeneity of the places—schools and industries—where these qualifications are produced and utilised*

This has meant diversifying as much as possible the structural characteristics of our analytical breakdowns, i.e., making provision for widely contrasting situations from the point of view of training and employment in order to identify and understand more easily the mechanisms reciprocally conditioning training and employment.

(iii) *The reasons for preferring a qualitative and inductive approach in an attempt to avoid the drawbacks of a case study*

The restricted geographical and professional scope of our study is not due—or

not entirely due—to material constraints (the duration and cost of the study) but to a deliberate methodological choice.

It was however necessary, in order to increase the scope of the study, firstly to select employment and training situations which were not of a restricted kind from the point of view of the numbers involved within the survey region; and secondly, to integrate or relativise the hypotheses or conclusions drawn from the survey *vis-à-vis* those reached by other studies carried out at national level.

B. The methods adopted

1. *Reasons for choosing the Bouches-du-Rhône area*

The Bouches-du-Rhône Department as a survey area seemed to us to fulfil the twin requirements of variety and accessibility. We were in fact able to examine contrasting situations from the point of view of employment and training and relativise these contrasting situations via an analysis of the departmental structures—these in turn being compared with national data.

In this inverted approach, going from the smallest to the largest, the area is in mid-position: it provides an immediate frame of reference for the survey carried out amongst industries and schools, and is at the same time a sounding-board or reflection of the national system of production and education.

Although the national frame of reference does, in fact, play a decisive part in explaining the processes of acquiring and using qualifications, it is none the less important to bear in mind that this too is “specific” in relation to other countries, so that one is able to treat these processes as relative and not consider the hierarchical categories which they produce as universal.

This procedure, which we have termed inductive or comprehensive, attempts constantly to interrelate in a dynamic fashion the observations made at the various levels, refusing to assign an independent and predefined status to these levels.

Areas are not therefore *per se* subjects for analysis. Nor do they correspond to the economic definition of catchment areas for labour, i.e., areas governed by the laws of population mobility. An area is no more than one of several solid bases for the methodological purpose of generalising the survey.

2. *The reasons for choosing the qualifications of sheet-metal worker and welder*

Before explaining the reasons for the choice of these different types of qualification for the study, one should perhaps explain what is meant by the term “qualification”.

If we have preferred this to the term “trade” or “speciality”,¹ this is because it conveys more accurately the collective (i.e. non-individual) dimension.

1. Which we do however sometimes use when they occur in the interviews with our respondents (those in charge of CETs or forms) or when they are used in their precise sense.

sion of the training/employment relationship and the difficulty, which results from this collective dimension, in accurately defining such a relationship and breaking it down into separate categories. The term "trade" in fact refers to "a combination of knowledge and skills defined in a relatively precise manner by previous practice... and which can be exercised in a relatively independent manner".¹

The term "qualification", however, refers to professional knowledge or "aptitudes" acquired and applied within a complex system whose elements or categories, with a fixed and separate content, are difficult to isolate: the educational system does not produce categories of individuals which are as clearly defined by the level and content of their professional knowledge as in the system of craft apprenticeship.

A more important point, however, is the fact that jobs in industry cannot be defined independently of one another: their "qualification" or "specificity" is closely related to their position within the vertical division of labour (within the firm) or within the horizontal division of labour (between sectors of activity, branches, etc.).

Moreover, it would appear that one cannot talk in terms of "qualification" without dealing with the gradation of training in the system of education and the gradation of jobs in the system of production—principles and hypotheses which we have adopted as the basis for our study. In fact, the definition of a qualification, whether this refers to an individual or to a job, always takes this interaction into account.

In the first case, one speaks of the "productive capacity" resulting from initial training and professional experience; in the second, one is concerned on the one hand with the concrete factors defining the activities performed, i.e. "the factors likely to express the differences and similarities of content in relation to other activities",² and, on the other hand, with the definition of the capacities required by the individual performing this job.

The qualifications studied here can therefore be defined as differentiated categories of sets combining the streams giving access to certain types of job and the sectors of industry which use these.

The choice of the qualifications of sheet-metal working and welding was to some extent an arbitrary one.

These qualifications do however comply with the two conditions set out in the statement of principles, viz., (a) that these should constitute sufficiently large homogeneous groups so that the study can be something more than a case study; and (b) that these should have, from the point of view of the training streams and the industrial sectors using them, sufficiently specific structural characteristics for it to be possible to identify the factors affecting the training/employment relationship and determine its relative originality.

1. R. Salais, *Economie et statistique*, n° 81-82, 1976, "Qualification individuelle et qualification de l'emploi. Quelques définitions et interrogations" ("Individual qualification and job qualification. Some definitions and questions").

2. R. Salais, *op. cit.*

(a) *The relative importance of the qualifications selected in terms of the number of individuals concerned.* The metallurgical trades can be broadly divided into the mechanical engineering trades and those employing the process of metal-setting. We chose the second of these two categories and, more precisely, the trades of sheet-metal working—pipe-fitting and welding—on account of the unusual importance in the Bouches-du-Rhône department of such industries as shipbuilding and repair and aeronautics as well as activities connected with the manufacture, assembly and maintenance of installations comprising sheet-metal and pipework (the installation and maintenance of the new factories at Fos; the vast number of refineries, chemical and petrochemical plants; plus the traditional local industries at Arles, for example).

A few figures will serve to illustrate this: the "Engineering industries" and "Shipbuilding and aeronautics", which are the main users of these trades (they employ about 55 per cent of the workforce in the branch "Forge and sheet-metalworking")¹ accounted for one-quarter of all those employed in industry in the Bouches-du-Rhône in 1975—much higher than the proportion for the country as a whole, namely 16 per cent.

From the point of view of the educational system, these qualifications are of special importance in the department: full-time students in Level V² in the specialities comprising Branch 09 "Forge and sheet-metalworking" represented 13 per cent of all those enrolled in specialised industrial courses at CETs in the Bouches-du-Rhône as against 8 per cent for the country as a whole.³ The other streams, i.e. apprenticeship (CFA) and FPA courses,⁴ also have a higher number of students in these metallurgical qualifications than in any other industrial trade qualification.

In addition to the relative importance of these qualifications in numerical terms, which was an essential consideration, our choice was also influenced by the contrasts they display as far as the characteristics of employment and training are concerned.

(b) *Some specific characteristics of employment and training.* In order to define the specific processes of interaction between the methods of acquiring a particular qualification and the conditions of its acceptance and use, as well as its relativisation with respect to a possible social or national effect of interaction, it would be necessary to combine the results of national studies, monographs on a departmental level and field surveys.

1. Source: report by the Groupe d'études de la façade méditerranéenne—total workforce in the branch "forge and sheet-metalworking" in the Provence-Côte d'Azur region in 1972=336,116.
2. In the Ministry of Education's classification Level V includes all the streams and training courses for workers and skilled workers.
3. Source: Education Statistics — for 1975 for France as a whole and for 1976 for the Bouches-du-Rhône.
4. Adult education, 6-8 month courses, dispensed in institutions under the authority of the Ministry of Labour, but whose content has been defined in close collaboration with industry.

We list below the main characteristics, deduced from the statistical information available, for the qualifications dealt with in this study. These need to be borne in mind from the outset, not only because of their relative originality, but also because they are likely to suggest specific processes of interaction and thereby justify our choice of these qualifications.

(i) *The different professional training streams.* There are three main types of organisation or "school" (CET, FPA and CFA) which provide the initial or "quasi-initial" training for the qualifications dealt with in this study, but their importance is different in each case.

The public CETs (*Collèges d'enseignement technique*—Colleges of Technical Education) or full-time technical teaching establishments are the most important stream in the case of sheet-metal working.

In the case of the welding trades, FPA courses (*Formation professionnelle des adultes*—Vocational Adult Education) are becoming increasingly important and are tending to take predominance over training in CET schools.

Private CETs are practically non-existent as far as the qualifications studied here are concerned and this reflects their lack of interest, which is particularly marked in the Bouches-du-Rhône department, in providing courses in the industrial sector.¹

(ii) *The specific characteristics of employment.* It is not easy to give any precise description of the structure of the firms using the qualifications of sheet-metal working and welding.

Of the 80 or so completely specialised firms in the department, at least 20 are known to be small concerns (i.e., 20 employees or less) and our sample is representative only of the medium and large-scale firms.

Consequently, most of those employed in the sheet-metal working trades are in firms about which the official statistics give insufficient detail for our purposes. Even if we eliminate such allied trades as cast and wrought metal-working, coach-work and structural steel, it is obvious that sheet-metal workers and welders are used in widely differing branches and to analyse this one would need to have a very detailed breakdown by activities and products.

One does however have a few points of reference; e.g., in the region, a majority (some 55 per cent) of those employed in the "forge and sheet-metal working" group of industries fall within the two categories of "shipbuilding and aeronautics" and "mechanical engineering". In these two categories, the proportion of those employed in medium-large and large firms (i.e. between 100-5000 employees) must be somewhere in the region of 60 per cent. This is no doubt due to the presence in the region and in the Bouches-du-Rhône department of very large aeronautics and ship-building firms. However, in the department alone, there are a further 32 firms of this size in the sub-categories "metalworking" and "industrial equipment".

1. The only private CET which played an important part in providing training in sheet-metal working in the Bouches-du-Rhône was recently converted into a CFA (*Centre de formation des apprentis*—Apprentice Training Centre). It should be mentioned that this school was connected with a large company.

On the other hand, despite the importance of "major industrial concerns" as employers of sheet-metal workers and welders (which is further borne out by the number of those in "technical management" positions—an estimated 20 per cent of the total), there are nevertheless a substantial number of small and even privately-owned firms (except in the aeronautics sector). In the department, firms with less than 10 employees account in fact for more than 60 per cent of all those employing salaried or wage-earning staff. As for the privately-owned firms, the actual numbers involved are not substantial (in the department: 338 firms in the "metal-working", "industrial equipment", aeronautics and shipbuilding sectors); however, their relative importance, combined with that of "craft" undertakings and small firms, none the less represents a small but real aspect of the potential employment for the qualifications studied here.

In addition, there is a further category of firms which play a special part in this employment, although it is difficult to assess this accurately. These are the temporary staff agencies with their many and varied activities, all of which are grouped under the heading "Services" in the statistics.¹ These are the traditional "help-mates" of the shipbuilding and repair industry and they have become more essential with the increasing number of contracts of varying importance and with the growing use of sub-contracting by the new industries in the area, particularly in the case of the sheet-metal working trades.

(iii) *The breakdown by qualification.* This breakdown is based on the vertical and horizontal job classifications supplied by the firms themselves.

This structure has a certain number of features which are common to both of the main branches which use the qualifications studied here. *In both of these branches, the workforce directly engaged in production* accounts for a larger percentage of the total number of employees than for industry as a whole in the Bouches-du-Rhône in 1975:

85.5% in aeronautics and shipbuilding

84.4% in mechanical engineering

76.9% in industry as a whole.

The proportion of operatives is particularly high:

61.1% in aeronautics and shipbuilding

68.7% in mechanical engineering

59.4% in industry as a whole.

Amongst these operatives, the vast majority are *skilled workers*:

88% in aeronautics and shipbuilding

75% in mechanical engineering

66% in industry as a whole.

I. The numbers employed by temporary staff agencies in the Bouches-du-Rhône rose from 2000 to 6600 over the period Jan. 1968-Jan. 1973 and accounted for 10% of the "Services" sector in the department in 1973 (Source: Sud, Supplément 3-1974 "L'emploi dans les agglomérations et les SDAU des BdR au 1.1.73" by J.F. Colin, P. Pierroini, G. Ollier and J.L. Roos.

These figures, which are derived from the 1975 survey on occupational structures,¹ give only a partial picture of the industries concerned. This survey in fact covers only undertakings with 10 or more employees which, as we have seen, means that a substantial number of firms are excluded.

Were these to be included, it would certainly have the effect of increasing still further the preponderance of skilled workers.

Judging by the occupational and educational structures, whose similar and dissimilar features we have just described, there would appear to be a field of interaction between "School" and "Industry" specific to each of the qualifications studied.

In other words, it is probable that, amongst the large number of skilled workers in the branches employing sheet-metal workers and welders, there will be different forms of interaction between the qualification/classification and the initial training of such workers.

1. Bouches-du-Rhône department: annual survey by INSEE (*Institut national des statistiques et des études économiques*).

II. Sample structure and methodology

Before describing our sample of firms and schools and the main indicators used in the interview guidelines, it should be pointed out that these are themselves to a certain extent the result of reciprocal action between the "School survey" and the "Industry survey": during the course of the survey changes were in fact made in the content of the questions asked (a particular reply given in a school could mean our going back to the firm and vice versa) and new questions were introduced.

The sample itself was also modified. Three training establishments were interviewed because they had been frequently mentioned by the employers. One of them had been initially left out of our sample because the number of students was so small.

Thus for us, the existence of "privileged" relationships between certain schools and certain firms, particularly as far as recruitment is concerned, was a more important criterion in selecting the sample than the size of the establishment.

A. The survey of firms

1. Choice and presentation of the firms observed

Two criteria have been used: (a) the size of the firms, and (b) the firms that include two types of activities: an activity of *production* in the workshop, and another *on site* where the work of assemblage presents a very different profile of the sheet-metal worker/pipe fitter/welder.

Eight firms had been selected. One refused to receive us; the preliminary contacts with another had to be terminated following a very large economic lay-off. In the end, six firms were investigated in our survey: the data concerning the firms could not be obtained in a uniform manner.

Firm No. 1

Products: pipes and fittings for naval repairs and for factories, sheet-metal for factories, iron and steel for constructional work

Work: unit production, non-repetitive, varied

Labour force: 150, of whom 107 are workers; 33 work on site (naval) and 74 (only 1 OS) in factory¹

Firm No. 2

Products: iron, aluminum, stainless steel

Work: unit pieces, varied

Labour force: 200, of whom 150 are workers; 100 work on site, and 50 (few OS) in factory

Firm No. 3

Products: columns for the chemical and petro-chemical industries' high-pressure equipment: stainless steel boxes

Type: heavy equipment, rather finely worked

Labour force: 250 with 80 per cent workers and 1 per cent OS

Firm No. 4

Products: naval repair, exclusively

Labour force: 570 of whom 465 are workers (16 OS)

<i>Breakdown:</i> mechanics	40 per cent
sheet metal workers	20 per cent
pipe fitters	20 per cent
electricians	20 per cent

Training: sheet-metal workers, pipe fitters = 30 to 40 per cent CAP, i.e. fewer than among mechanics and electricians

Firm No. 5

Four factories in France. The establishment studied is the main factory, composed of two autonomous establishments—production and construction site work.

Product: heavy equipment for the chemical and petrochemical industries, drilling platforms

Type: unit production, varied

Labour force: production: 522 of whom 336 are workers

Training: 25 per cent with CAP out of the 80 sheet metal workers

Firm No. 6

Products: naval construction

Type: all types

Labour force: 5933 with 4,173 in sheet-metal working trades (sheet-metal workers 129, iron workers 632; ships' pipe fitters 149, hull tracers 76, welders 1146)

Firm No. 6 is unique as compared to the others in having its own CET with 178 students. As of the beginning of the 1977 academic year this CET has become a CFA (a change from three years to two years of training) with a reduced enrolment of 102 students. Moreover, this company has a system of training leading to the CFPA² with qualified teachers for the attainment of the AFPA diploma. Interviews were held only with the training staff.

1. OS = ouvrier spécialisé = non-qualified worker.

2. *Certificat de formation professionnelle d'adultes*: Certificate of Adult Vocational Training.

2. The persons interviewed

Interviews were held with the following people:

Firm No. 1

1. Head of personnel and one person responsible for training
2. 1 head of a production workshop
 - 1 head of a construction workshop
 - 1 construction site foreman
 - 1 production foreman

Firm No. 2

- 1 head of personnel

Firm no. 3

- 1 director of engineering, also responsible for training

Firm No. 4

- 1 person responsible for personnel

Firm No. 5

- 1 head of personnel for production
- 1 welding engineer, head of the welding workshop
- 1 sheet metal working foreman

Firm No. 6

- Head teacher of the school
- 1 head of construction site
- 1 foreman

3. Guidelines for the interviews

The interviews were conducted in accordance with an interview guideline. This outline is the result of a lengthy questionnaire, reshaped and reduced into a guideline after trial runs with the heads of personnel. A questionnaire that was too detailed proved to be ineffective for grasping the diversity and complexity of the situations.

The outline includes:

1. A minimum of information on the number of workers and non-workers according to the levels of qualification and levels of training.
2. An appraisal of the past and future development of the work force and of its training, taking into account the size and technology of the firm.
3. A report of training acquired within or through the medium of the firm.
4. The nature of relations with the system of formal training and other programmes, and the value placed on the schools or training centres supplying the workers.
5. A career profile for trades (sheet-metal workers, welders, construction-site pipe fitters) and the level of knowledge and/or experience—according to the categories, modalities and conditions of recruitment, with a particular

emphasis on the educational criteria (general and professional training), age, experience, etc.

The interviews with production or site personnel (other than the heads of personnel) followed this guide but included a biographical aspect.

B. The school survey

1. *Selection and structure of the sample*

A total of 8 schools or training centres were surveyed.

These cover all of the different initial training streams (CET, CFA, FPA) and are responsible for training the greater part (more than 50 per cent) of those qualifying in these specialities within the survey areas. It was possible for this school survey to be practically exhaustive because both the survey area and the range of occupations studied were limited.

We have already seen how the choice of certain training centres was influenced by our interviews with employers.

In addition, the monographic study of the "school" area enabled us to establish certain priorities with regard to this choice by revealing:

- the importance of sheet-metal workers in the Marseilles area (854/1452) and in the Berre South-West area (261);
- the particular importance of one long-established CET in the Marseilles area with regard to sheet-metal working;
- the very high number of drop-outs and final exam failures in some schools.

The fact that our schools and training establishments were almost entirely located in Marseilles and the Fos-Etang de Berre region is due to the characteristics of the survey zone¹.

(a). *5 public CETs, including 2 in Marseilles.* The total number of students enrolled was 2335 (i.e., an average of 465 per CET) divided, for the most part, between the specialities in Category 09 "Sheet-metal and structural metal-work" and in Category 10 "General mechanical engineering".

In 1976 703 students were in the 3 grades preceding the CAP qualifications which concern us here. The breakdown was as follows:

535 in the sheet-metal working CAP Option A: Iron,

40 in the sheet-metal working CAP Option D: Industrial pipework,

128 in the welding CAP.

Since the BEP qualifications are of very minor importance where these specialities are concerned (some 5 per cent of enrolment), we did not interview the one and only CET in the Department which has this stream.

1. These same characteristics also affect all of the industrial trades taught in the Bouches-du-Rhône. It should be noted that there is not one single professional training centre in the rural area to the north.

(b). *1 private CET.* This is the school linked to Firm No. 6 (shipbuilding) which, in 1976, turned out 178 students with various CAP qualifications, 50 per cent of which were in sheet-metal working.

(c). *1 CFA.* This CFA, which was founded in 1933 by a priest, has since 1964 operated under the terms of an agreement concluded with the Federation of Metallurgical Trades whereby it provides day-release courses covering two days a week. There are 100 students on the rolls including a small sheet-metal working section, i.e. a combined total of 20 first-year and second-year students. This CFA is the complete opposite of the private CET, which later became a CFA, from the point of view of methods of recruitment, educational standards and the social background of its students.

(d). *1 sheet-metal working section and 2 welding sections at the AFPA (mixed welding and standard pressure pipe welding).* Each section comprises 15-16 trainees, with ages ranging from 17 to 50. Half of them are under 21. Most are of French nationality except for one section where 50 per cent are from the Maghreb. In most cases, trainees are given "initial" training despite the fact that some of them (about 15 per cent) already have a CAP in a similar speciality, e.g. turner, mechanical engineering, etc.

2. Functions of the persons interviewed

Public CETs: in all cases, we interviewed the school head. At one of these CETs the Careers Counsellor, the Work Superintendent and the Bursar took part in the discussion.

In another, we were able to meet the GRETA¹ representative, who was responsible in particular for relations between the CET and employers.

Private CET: the school head and his deputy.

CFA: the school head.

AFPA: before being allowed access to the Centre itself and to the sections we wished to survey, we had first of all to interview the persons responsible at the regional offices, i.e.: the person responsible for the Languedoc-Provence-Côte d'Azur District AFPA; the Regional Director of Psychotechnical Services and his assistant; a psychotechnician and former ANPE² officer. We subsequently interviewed: the Director of the AFPA Centre; a sheet-metal work instructor; a welding instructor; and two trainees, one in the sheet-metal working section and one in the welding section.

3. Interview outline

We were interested in the following three points, which were more or less developed according to the state of the data already gathered on each subject:

1. An association of public scholastic establishments responsible for co-ordinating activities in the field of further training.
2. Agence Nationale pour l'Emploi.

(a). *The origin of the students and teachers.* Questions concerning the academic background of students in the different divisions of the establishment were not posed if they had already been covered in the Ministry of Education questionnaire¹.

(b). *Academic organisation and results.* On this point we used a recent survey made by the Regional Delegation of ONISEP and the SAIO² for Aix-en-Provence on the development of the studies of one class of the public CET of the Academy of Aix-en-Provence (1972-75).

This survey analyses the drop-out rate and the examination failure rate broken down by speciality, district, level and type of diploma (CAP in 2 years and BEP in 3 years).

(c). *The relations between the school and the job market.* We covered apprenticeship tax (the portion of the tax paid by the firms); agreements on further education; and openings for students.

Here, again, we used the data in the SAIO survey (cited above) in which there was a questionnaire, directed to the heads of the establishments, that concentrated on the professional placement of students.

1. This treats the public and private CETs.

2. Service Académique d'Information et d'Orientation. 'Formation et insertion professionnelle des élèves de CET publics', Internal document, June, 1977.

III. The wide variety of ways in which professional training is acquired

A. Introduction

A description of the methods of acquiring professional training is essential to the understanding and recognition of diplomas and initial training by employers, which will be dealt with later. Only the interaction between the system of education and the system of production will be analysed *per se*, i.e. their degree of autonomy and their mutual interaction.

However, when dealing with the process of acquiring professional training, one must first of all clear up a certain number of ambiguities and misunderstandings.

1. *Criticism of the dichotomy "Initial" training/"Continuing" training*

If by "initial" training is meant the basic professional training given to *youngsters*, it seems to us that one could include in this the training for a CAP and a BEP and even for a BP¹ dispensed by the CET as part of the "Social development" programme. In another but different way, one could also include "Employment-training contracts"² as well as the "Youth programmes"³ as part of initial training. Whether they are already in full-time employment or are seeking or have sought full-time employment, they will in the end have received no more than a rapid professional initiation. One could therefore describe such forms of training as substitutes or, in certain cases, as expedients; they represent either a disguised form of repeating during initial training or an attempt to facilitate insertion into the working environment.

The long courses (six months) at the AFPA may—if only partially—be included in this category. Priority is in fact given to trainees over 21. The training dispensed, which is sometimes a substitute for other forms of train-

1. *Brevet professionnel* (Vocational diploma): requires 2 years of professional experience following the CAP.

2. Decree dated 31 March 1976.

3. Law dated 5 July 1977. This is intended to set up a system of 6-8 month spells in industry involving a total of 200 hours training or 6-8 month training periods in approved centres. It is financed by government aid and a 0.2 per cent levy on firms' turnover. The object is to provide additional training and on-the-job experience.

ing, is often of an initial kind, whatever the trainee's age. A number of trainees have either had no basic professional training or want to learn a new skill in order to change jobs. This should not be taken as implying that "Continuing training" is "Initial training" under another name, but that the distinction is not merely denoted by entry into full-time employment.

2. *The ambiguity and ambivalence of certain terms*

(a) *Ambiguities.* Level V as defined by the Ministry of Education (Circular dated 11 July 1967) puts on an equal footing streams which in no way involve an identical or even similar type of training. In this Level V the Ministry of Education in fact includes such radically different methods of training and types of qualification as:

1. Full-time and long-term education (2-3 years) in a state or private CET leading up to the CAP and BEP diplomas.
2. Sandwich courses (usually 3 weeks in industry, 2 weeks at school) covering a period of 2 years and leading up to a CAP.
3. Full-time but shorter FPA courses (6-8 months) leading up to the FPA Certificate. These courses are designed for youngsters who have passed the school-leaving age.
4. Agreements concerning continuing education governed by the laws enacted in July 1971 and concerned with courses leading to a skilled worker's diploma. These courses, which are provided either by state educational institutions or by private organisations (e.g. professional associations, etc.) are designed for persons already in full employment.

Level V, which defines a single training stream, covers in fact subject-matters which are quite different and unequal.

A further ambiguity needs to be mentioned with regard to the organisations responsible for the above-mentioned forms of training.

The Ministry of Education is responsible for only about 37 per cent of the annual output from training courses in the specialities of sheet-metal working and welding that correspond to Level V (cf. Table 1); the figures in the first column of this table represent the combined total for state and private CETs. With regard to the other forms of training, the Ministry of Education intervenes only as a regulating body in the case of the CFAs (col. 2 of the table) and in the agreements involving a state institution such as a CET, the Préfecture and the industrial branch concerned (col. 4). The AFPA, which is under the authority of the Ministry of Labour, is completely outside the Ministry of Education's jurisdiction.

(b) *Ambivalences.* The types of training given in CETs and CFAs, as well as the institutions themselves, represent methods of acquisition which, although they have a certain number of characteristics in common, do not carry the same weight (at Level V) on the labour market.

For example, in the case of the sheet-metal working and welding qualifications, there is a wide difference between an experimental CET and a CET in the suburbs of Marseilles, and between the private CET (now a CFA) belonging to the shipbuilding firm No. 6 and the CFA.

There is no need here for us to analyse this point in detail. This comment is simply intended to draw attention to the risks of confusion in interpreting

TABLE 1. Training courses in sheet-metal working and welding.

Average annual output from formal education 1970-1976 (State and private CET's)	Output from apprentice training in 1974 (CFA)	Output from further professional training in 1974	
		AFPA	Agreements
95 CAP (3 yrs) Welders	4 Welders	131 Welders	375 Welders
253 CAP (3 yrs) Sheet-metal workers - Option Iron	21 Sheet-metal workers (iron)	178 Pipe-fitters	75 Tracers Sheet-metal workers
30 CAP (3 yrs) Sheet-metal workers - Option Pipefitter	25 Total	309 Total	450 Total
378 ... TOTAL = 32.5%		TOTAL = 784 — i.e. 67.5%	
(Aggregate total = 1162)			
SOURCE "Etude sur l'évolution de l'emploi et ses conséquences sur l'adaptation de l'appareil de formation", Groupe d'étude de la façade méditerranéenne, 1976.			

these terms and to the need for a methodology which, as mentioned earlier, will attempt to define the character of a training establishment, the structure of its teaching, its pedagogy and its output in relation to the social, economic and industrial fabric of which it is part.

In what follows, we shall be using the term "worker training" to describe the training cycles of from six months to three years which take place entirely or partially outside of industry itself and lead to a diploma (CAP, BEP, CFPA).¹ The purpose of these study cycles or courses is the acquisition (or re-acquisition) of the basic qualification for a skilled trade.

1. See Glossary of terms.

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Master Plan for

KEY TO SYMBOLS

-  General education
-  Years of study in higher education and grandes écoles
-  Technical and vocational education
-  Agricultural education
-  Apprenticeship and vocational courses
-  Classes preparing for grandes écoles
- T Terminal year
- △ Baccalauréat
- ▲ Technician's diploma
- ▲ Agricultural technicians's diploma (Bac. D)
- ⊙ Diploma of vocational studies
- ⊖ Diploma of agricultural education or apprenticeship
- ⊕ Diploma of agriculture (vocational or technician)
- Certificate of vocational competency (3-year course)
- ⊠ University diploma of technology
- ◆ Diploma of engineering
- ⦶ Diploma of completion of first cycle
- ⊖ Master's degree
- Certificate of aptitude (secondary-school teachers)
- Qualification as lycée teacher.
- ⊗ Qualification as higher-education teacher
- Ⓢ Diploma/certificate of completion of studies
- ★ Entrance examination for grandes écoles
- ℙ Bachelor's degree
- D Doctorate (3rd cycle)
- D Doctorate (highest grade)

Glossary of terms

AFPA	Association nationale pour la formation professionnelle des adults (National Association for Adult Vocational Education)
BET	Brevet d'enseignement industriel (former system) (Diploma of Industrial Education)
BEP	Brevet d'études professionnelles (Diploma of Vocational Studies)
BP	Brevet professionnel (Vocational Diploma)
BTN	Brevet de technicien (Technician's Diploma)
BTS	Brevet de technicien supérieur (Advanced Technician's Diploma)
CAP	Certificat d'aptitude professionnelle (Certificate of Vocational Competency)
CES	Collège d'enseignement secondaire (College of General Secondary Education — 1st cycle)
CET	Collège d'enseignement technique (College of Technical Education)
CFA	Centre de formation des apprentis (Centre for Training Apprentices)
CFPA	Certificat de formation professionnelle des adultes (Certificate of Adult Vocational Training)
CPA	Classe préparatoire à l'apprentissage (Preparatory Class for Apprenticeship)
CPPN	Classe pré-professionnelle de niveau (Pre-vocational Preparatory Class)
DEUG	Diplôme d'études universitaires générales (Diploma of General University Studies)
DUT	Diplôme universitaire de technologie (University Diploma of Technology)
ETAM	Employés, techniciens, agents de maîtrise (Employees, Technicians and Supervisors)
GRETA	Groupement d'établissements pour la formation continue (Association of Establishments for Continuing Education)
IUT	Institut universitaire de technologie (University Institute of Technology)
OP1-OP2-OP3	Ouvriers qualifiés (Skilled workers)
OS-O1-O3	Ouvriers non qualifiés (Unskilled workers)
PTA	Professeur technique adjoint (former system) (Assistant Technical Teacher)
PEG	Professeur d'enseignement général (Teacher of General Education)
SDAU	Schéma directeur d'aménagement et urbanisme (Master Plan for Development and Urban Improvement)

B. The negative attitude towards the specialities of sheet-metal working and welding

There is a negative attitude towards the specialities of sheet-metal working and welding: they are at the lower end of the scale of training streams and jobs, with welding ranked below sheet-metal work.

1. *Educational level*

The types of training leading to a CAP after 2 or 3 years in a CFA or CET (public or private) are affected by the general negative attitude towards manual occupations. The raising of the school-leaving age to 16 in 1967 had the effect of keeping at school students who otherwise would have left at the end of the primary level to begin an apprenticeship to a trade. Previously, these were students who, for the most part, had not achieved the required standard for entry into the 6th grade or to a CET or were over the age-limit for enrolment in these streams. The remainder would continue in the academic stream (6th grade) or in the vocational stream (CET). The most gifted did not necessarily choose the academic side—at that time, entry into a technical stream did not carry the same negative connotations that it does today, because there was a smaller number of second-level schools, a lower level of enrolment, the need to earn a living plus a more positive and less disparaging attitude towards manual work. This shift towards the less-gifted type of student is well illustrated by a statement made by the head of one of the CETs surveyed: "At one time we recruited only students who had their primary-school leaving certificate. The CET represented a promotion following the primary school. The entrance examination was almost on a par with the CAP in French and mathematics. The less bright left when they were 14 and began an apprenticeship. At one time, the CETs took the less bright from amongst the best students leaving the primary level; nowadays they take the less bright amongst all of these students".¹

It would however be wrong to imply that, nowadays, students entering a CET are those at the bottom of the academic scale. One should also mention those in Transitional 5 who join the Pre-vocational Preparatory Class (CPPN) and thereafter the Preparatory Class for Apprenticeship (CPA).

These students, who will not enter a CET, are generally of an even lower standard. However, as we shall see later, a far from negligible percentage of the first-year enrolment in CETs come from these "lower" 5th grades—Transitional 5; most of them are in the sheet-metal working and welding sections. At the end of their first year, a large number leave the CET to enrol in a pre-apprenticeship class at a CES or enter a CFA to take an apprenticeship in the trade they have begun or, in some cases, switch to another trade such as pastry-cook or hairdresser.

1. Another headmaster said that the students enrolling at that time all had good CEP results (*Certificat d'études primaires*—primary-school leaving certificate) and the success rate achieved at the CAP was 70-80 per cent. According to him, the change occurred around 1968-69

The orientation towards CFAs is therefore even more negative in character: either they recruit students who have been obliged to abandon sheet-metal working and take up another trade—this occurs in the case of a CFA linked to a CET, or they enrol, even in the sheet-metal working section, students who have not gained entry to a CET—this is true of the CFA included in our survey which has a “practically illiterate” student group, particularly in this trade section.

Another and more recent factor has served to accentuate the low educational level of students enrolled in sheet-metal working and welding and increased the negative attitude towards these two specialities. It affects three of the CETs surveyed. Up until 1975 these three CETs received more applications than they had places available. They were thus able to be selective. Since 1977 this trend has been reversed and not only have they been obliged to accept every application but also to solicit them. Here we need only mention three of the main reasons for this:

- practical conditions, e.g. the closure of industries providing this type of employment;
- conditions affecting both the business climate and structure, e.g. the industrial complex at Fos has not expanded as forecast. The plan for this complex however included the development of certain localities in the form of ‘new towns’, equipped with a number of second-level educational establishments (CES, CET, *lycées*);
- and lastly, a macro-demographic factor, i.e. the advent of age-groups whose numbers were limited, which obliged these establishments to broaden the basis of their recruitment so as to avoid major problems in carrying on their operations or those of some of their sections.

These three reasons have a cumulative effect on the negative attitude of students and on the quantitative and qualitative drop in CET recruitment. In fact, in order to maintain their potential levels of enrolment, the CES are inclined to retain students who would otherwise constitute the most suitable recruits for the CETs.

They are moreover all the more inclined to agree to requests from parents that their sons should go on to take a long study-cycle, since these have become more available as the result of the creation of long second-cycle study sections in the vicinity of the CES.

2. *Socio-professional and ethnic groups*

Without wishing to establish too close a correlation between socio-professional categories and educational levels, one nevertheless has to admit that, whereas one social category is destined primarily for the CETs and the acquisition of a manual trade, another escapes this almost entirely. As the following table shows, this applies to the sons of upper-class families.

The socio-professional categories of the parents of students in the sheet-metal working and welding sections of the five public CETs were as follows:

	%
Farmworkers	1.0
Farmers	5.2
Blue-collar workers	66.6
White-collar workers	8.0
Retailers	3.0
Craftsmen	3.0
Other	13.0
Senior categories	0.2
	<hr/> 100 <hr/>

Two of the CETs stated that the category "Other" mainly comprises invalids and retired or unemployed persons. The low number of farmworkers is due to the small agricultural population in this particular region. One must also situate these categories in the social space in which they live. To a varying extent, this social space is characterised by a concentration of large apartment buildings and by a low educational and occupational mobility. Parents for example are averse to their children having to make a long journey to school—they prefer them to attend the nearest CET, even if this results in their being unable to learn the trade they would prefer, rather than have them make the journey to a more distant CET where they would be able to find the section they want.

These two factors combined accentuate even further the negative attitude towards the CETs and CFAs and, in particular, the metal-working and welding sections.

A brief comment on the subject of ethnic groups: in the sheet-metal working and welding sections of the five CETs surveyed the breakdown overall was French 77 per cent, Maghreb 20 per cent, and others 3 per cent. This illustrates the relative importance of foreign ethnic groups and particularly those from the Maghreb, which represent 40 per cent in one of the CETs. Consequently, this causes a shift from the social pattern to the trade pattern with, as a result, a down-grading of the latter. It should be stated, however, that the educational standard of immigrants from the Maghreb and even more their strong motivation make them by no means inferior to their French counterparts.

3. Negative rating of the sheet-metal and welding specialities

The trades dealt with here have strong negative connotations in the minds of parents, who exercise an important influence on the choice of option after the 5th grade—nor should one forget the important part played by the career advice given by teachers at the end of the 3rd grade. It would seem that only fathers who are sheet-metal workers themselves transmit to their sons a favourable image of this trade. We need do no more than stress the importance of this fact with regard to career orientation, without going into detail as to the underlying reasons.

Indeed, its importance must not be overlooked because it is one of the factors which explains why sheet-metal working and welding recuperate those who are rejected by the mechanical engineering section. Amongst the school population surveyed, mechanical engineering carries considerable prestige, which is far from justified in the case of the "general engineering" CAP which provides access to few job opportunities.

In the case of the 3-year CAP course, the selection procedure operates in the following way; at the end of the first year of common core subjects (mechanical engineering, sheet-metal working and welding) the top students opt for and obtain the mechanical engineering speciality; sheet-metal working is in second place, followed by welding (in certain cases the order is: sheet-metal working (iron)—pipefitting—welding). The attraction of mechanical engineering for top students is even more inconsistent in view of the fact that sheet-metal working requires as much, if not more, abstract intellectual ability, e.g. descriptive geometry, tracing, the plotting of volumes in space, and provides access to more job opportunities.

Because of these requirements, in schools where such sections exist, students in the sheet-metal working sections, when they are unable to keep pace, are either relegated to the welding section or they drop out.¹ The same is true in the case of selection for an FPA based on a psycho-technical test: "If the candidate for sheet-metal working is not of the required standard, he is offered a course in welding".

It is important however to qualify this negative attitude towards the trade of welder—a small but significant number actually opt for this trade. These are in fact candidates for a CAP or CFPA in welding who intend subsequently to take a course in oil-pipe pressure welding in a CET or AFPA and obtain a "gas-welder's" certificate. In the case of the CETs, such training is the result of an agreement drawn up with the Préfecture. It applies to young men who have completed their military service and allows them the equivalent of 1,000 hours of "social development" courses with pay. Some students in their first CAP year, who intend to take this course subsequently, deliberately fail tracing so as to be sure of being oriented to the welding section. The reasons for this is simple: once they have this certificate, these welders get a job on an oil or natural-gas rig—abroad or offshore—and earn considerable sums (F.10,000-15,000 a month). Although this is somewhat exceptional, it nevertheless illustrates one of the features of a welder's training: a welder has to acquire a "knack". It is the specific "knack" which he acquires through experience (e.g. pressure and high-pressure welding plus the ability to weld in any position and on the flat, upwards, downwards or overhead) that determines the professional hierarchy amongst welders. But although intelligence is required in order to become a skilful welder, he does not need the abstract intellectual ability (tracing) which provides the sheet-metal worker

1. There is a higher percentage of working men's sons in the welding sections than in the sheet-metal working sections.

with the possibility of vertical promotion (i.e. supervisory positions) whereas the welder's promotion is horizontal (i.e. pay).

Here we have done no more than mention some of the features which distinguish sheet-metal workers from welders. They provide an introduction to the following section on pedagogy and we shall be referring to them again in the chapter on the recognition and use of diplomas.

C. Pedagogic structure of the training for sheet-metal workers and welders

1. *Recruitment of students/trainees*

Some further detail is required on this subject, although we do not intend to repeat what has already been said.

1. *Age.* It is obvious that the teaching process is linked to age. The law concerning the employment of minors forbids boys under the age of 18 to carry heavy objects, to work on sites where there is an element of danger, etc.— measures which make it impossible to learn a trade under real conditions *in situ* and which imply a “scaled-down” system of teaching (with the exception of its “life-size” costs, as we shall see later). Employers find this situation difficult to accept because, in their eyes, a trade is learned young and the knack acquired by handling life-size objects in a workshop or on a site.

2. *Professional experience, related to age.* The methods used for teaching a person over 21 will be quite different from those used for a 14-year-old. The former will already have some job experience, e.g. as a sheet-metal worker or welder, and his aim will be to get a higher qualification or a new one. As a result of this, the motivation of FPA students/trainees will, at least for a large number of them, tend to be stronger than the motivation of students leaving a CES to enter a CET.

3. *Scholastic standard.* In this connection, it would perhaps be better to speak of the scholastic *character* of a particular school and its teaching method. In fact, the scholastic standard is generally low, as was seen in the case of the CETs and the “practically illiterate” students at the CFA. The same is true for FPA trainees, particularly in welding: “They do not know what is meant by a 45° angle, a cylinder or a horizontal or vertical line. What do you do with a fellow of 30 who cannot divide 4 by 2? You have to invent a code to enable them to read a plan”. Aside from the standard of education, what influences and conditions the pedagogic structure of the training is the academic or non-academic character of the students/trainees and the schools themselves; e.g., students leaving a CES, whose choice of aversion for the academic system, will react differently with regard to the vocational training programme for FPA trainees which, as we shall see in a moment, bears even less relation to formal theoretical education.

In this respect, CFA training—particularly in the CFA we sur-

veyed—falls between two stools. Although he is better off with regard to “practical training” (doing apprenticeship work one week out of two), the trainee finds himself at a double disadvantage as far as “theoretical training” is concerned (32 hours of courses per fortnight, of which 16 are in the workshop). However, those who have had 3 years of full-time study in a CET and those who have had 2 years of sandwich courses in a CFA have to sit the same examination (CAP). The overall success rate in obtaining a CAP is affected by this, even though the practical and theoretical parts of the examination are separate.

These comments do not apply to the company CFA, which has a somewhat unique structure which will be analysed later.

Since it awards its own diploma, the FPA has none of these problems.

4. *Numbers.* The number of students in a CET class ranges between 15 and 30 and an FPA section comprises about 15 trainees—which permits instruction of a more individual kind.

2. *The teachers*

There are three categories of teachers in CET's and CFAs:

The PEG (Professeur d'enseignement général—Teacher of General Education)

The PETT (recently renamed PEPT: CET teacher for theoretical vocational education)

The PTEP (recently renamed PEPP: CET teacher for practical vocational education).

The PEGs (teachers of French and mathematics) have various qualifications, i.e. Baccalauréat + ENNA (Ecole normale nationale d'apprentissage—National Technical Teacher-Training Schools)—DEUG or DUES level.¹ They are assistant teachers or full teachers. Their numbers include graduates without a secondary school teacher's diploma who, for this reason, would not be able to obtain a post in the second cycle.

The PETTs are often holders of a Technician's Diploma for engineering drawing, have spent several years in industry working in a drawing office and have sat the entrance examination for ENNA. “Family and social education” is a subject which is taught mainly by women.

These two categories of teachers, particularly the first, are subject to various conflicting pressures—having sometimes been obliged to interrupt the final stages of their education, they find themselves faced with difficult problems of discipline and teaching technique, particularly in French and modern mathematics where they have to deal with students “some of whom scarcely know how to read, write and add up”. They are the ones who tend to become the most “fed up” with the system of education and schools. They are nevertheless bound by the curricula and the final examination, in which their subjects are a major reason for the failures at the CAP. Lastly, they are accorded little esteem by employers who consider—particularly in the case of

1. See glossary of terms, p. 283.

welders—that general education is a waste of time, a “sprinkling of knowledge” which diverts students from the task of learning a practical trade.

The PTEPs are the third category of teacher. Their recruitment has undergone a considerable change in recent years.

Originally, the PTAs (Assistant Technical Teachers) assigned to apprenticeship centres and later to the CETs, were skilled workers who had learnt their trade on the job, i.e. they were required to have spent 5 years in the trade, like those assigned to the technical *lycées*. When the kind of diploma required was the CAP, BEI or BP, the number of years' professional experience was of real importance. It is not uncommon to find PTEPs in CETs with 10 years' professional experience.

However, these recruitment requirements were progressively modified—the “level” of the diplomas required was raised and, at the same time, requirements in terms of professional experience were lowered.

This change was given official recognition in the Statute for CET teachers (1975), i.e. recruitment at the level of *Baccalauréat* + 2 years. Practical experience was recognised only in terms of equivalence, i.e. 1 year of teaching corresponding to 1 year in industry (at least officially—in fact the holder of a BTS would be generally recruited for a CET after 1 year in industry), with the *Baccalauréat* + 3 years in industry or, alternatively, 5 years in industry with proof of studies in continuing education leading to Level IV.

What is more, the joint examinations, where success depends basically on the results obtained in French and mathematics in the written examinations, mean that candidates from the technical *lycées* or the IUTs with their BTN, BT, BTS or DUT have a better chance and progressively CET teachers will be those who themselves have “avoided” the CET thanks to their scholastic “success” and who will have practically no professional experience.

Thus, the gap widens. The teaching profession finds itself imprisoned in an increasingly theoretical system of recruitment which becomes a reason for reproaching it for its attachment to general education whilst at the same time supporting its refusal to open the school to anyone who does not provide the requisite guarantees of competence and impartiality.

This mutual distrust between teachers and “professionals” in industry is accentuated by the lack of any real system of continuing training for teachers.

A real problem from an educational point of view and from the point of view of relationships with industry is the retraining or continuing training of workshop teachers. The problem is most acute in the case of teachers with 20 years of service in a CET and for those recently recruited from *lycées* and IUTs. Various solutions have been adopted by the CETs, depending on their relationship with industry. For example, one CET which was obliged to abandon its social development courses and its approved courses,¹ since its teachers were unwilling to work extra hours, has seen its contacts with

1. In the area of adult training.

industry reduced to visits to factories by students. The other CETs however have various agreements: courses leading to the Brevet Professionnel (Professional Diploma)—in sheet-metal working and welding—financed by the state and the metallurgical profession; courses for the CAP in sheet-metal tracing (agreements on an individual basis); courses not leading to a diploma but based on direct agreements with individual firms plus agreements to loan teachers to individual firms.

One CET however is in a somewhat special situation: its relationships with the "professionals", i.e. those exercising the trade in industry, are closer and more integrated in the teaching process itself. We shall have occasion to refer to this later; for the moment, we shall be mentioning only those aspects which have direct bearing on our study, namely:

1. The existence at each level of a "learning community", for example in Level V, CAP and BEP students and adults undergoing training. This mixture of youngsters and adults with industrial experience is enriching for the teacher himself—he is encouraged to go beyond the mere dispensing of knowledge (theoretical or practical) and develop an attitude to learning amongst his students.
 2. The training of adults has made teachers think about ways and means of overcoming the backwardness of CETs with regard to the new specialities and technological structures which are emerging. In order to do this, the teaching staff has developed contacts with industries and devised its programmes on the basis of "skills" (i.e. the types of skills to be developed) rather than on the basis of repeating knowledge (e.g. resistance of metals).
 3. The creation of a tripartite "jury panel" (teachers, trade associations and "professionals") which assesses the student's training pattern; if the jury decides that the student has a "progressive pattern" it recommends to the teaching staff that his subject-matters be re-organised to emphasise his strong points. The teachers therefore find themselves placed in a quite different situation.
 4. In conjunction with the Industrial Trades Association at Fos (GMIF), the CET has organised pre-induction or practical application courses. These courses, which are for students in their final year, last 15 days and are held at Easter; they also contribute to the training of teachers who accompany their students and visit the local firms. At the end of the course, they benefit from the "feed-back" from the students.
 5. The arranging of courses within industry and continuing training courses jointly supervised by the teachers and the "professionals".
- A certain number of these operations have been organised with the aid of the local GRETA office.¹ There would appear to be some difficulty in getting the unions to agree to "professionals" taking part in the activities of a CET.
1. Groupement d'Etablissements Scolaires (Association of Educational Establishments), whose object is to co-ordinate policy with regard to continuing training. In 1977 eight GRETA's were set up in the Bouches-du-Rhône: Salon, Istres, Aix, La Ciotat and Marseilles (4).

However, these problems are apparently being ironed out; the teachers benefit from this system—they find that this gives added prestige to their speciality. Moreover, it would appear that the students gain in stature both as persons and as technicians.

It should be remembered that this is somewhat of an exceptional case. The problem of the relationships between the teaching staff and the “professionals” becomes acute when it is not solved in terms of an alignment of the teaching programmes, methods and techniques with the “requirements” of industry. In view of the fact that such relationships are rare and often superficial, the educational problem tends to be seen only in terms of adaptation, thereby perpetuating and accentuating the same problem.

Finally, we need to say a few words about the AFPA teachers or instructors.

The training received by AFPA instructors usually follows the following pattern (compulsory minimum): a standard of vocational training equivalent to the BP plus five years of professional experience as a P3. The candidate undergoes a 16-week training period which includes teacher training in an AFPA instructors school (CPTR), a period of practical teaching under the supervision of an experienced instructor in an AFPA centre and, to finish, a final period in a CPTR. The big difference compared with CET teachers is that AFPA instructors teach all of the subject-matters in their speciality, i.e. 36 hours per week (it should however be stated that far more time is taken up by practical work—we shall be referring to this again at a later stage). What is more, from time to time the instructors attend 15-day refresher courses either in industry or in a CPTR between sessions and never during the holidays. It is obvious therefore that the training given to AFPA instructors is based on a teaching objective which is quite different from that of the CETs.

The company CET/CFA: as was stated in the section on methodology, this company school changed its status from a CET to a CFA in 1977, which enabled it to provide training more closely related to the company's requirements. The first-level teachers (French, mathematics, technology and engineering drawing) are equivalent to PEGs and PETTs but paid by the company. The second-level teachers (techno-professional, initiation and production) comprise “permanent” and “rotating” staff (11/22). There are 900 hours of instruction per year for each level. Second-level instruction is given *in situ* but in a workshop specially designed for the purpose. The teachers are OP3s and foremen. For the part concerned with production, the students are divided into groups with a foreman in charge of each. These foremen are given courses in teaching methods and techniques along with the first-level teachers.

When the CET became a CFA a 6-day seminar was organised for the teachers on “successful teaching”.

In addition to the CFA-type school training, the company provides an FPA-type course for adults and another course as part of the “employment-

training agreement". We shall confine ourselves to a description of the adult training programme in order to illustrate the way instruction and production integrate and overlap.

The system adopted is very similar to that of the AFPA with, however, stiffer standards of recruitment. Applicants are workers with grades from O1 to O3; they have to pass a psycho-technical test and the final decision is made by the head of personnel (out of 25 applicants, 16 were admitted). They spend the first month familiarising themselves with the various trades exercised within the company—this is basically a rapid review of techniques prior to spending time in each of the different workshops as an assistant constructional ironworker, assistant sheet-iron worker, assistant pipe-fitter, etc. This phase lasts from two to six months, at the end of which there is a screening procedure based on the individual's record of absenteeism and his motivation and aptitude. The successful candidates are then recommended for a four- to five-month course in either welding, pipe-fitting or structural steel work. Since the welding instructors are accredited, the welders can sit the examination for the CFPA (Certificat de Formation Professionnelle des Adultes — Certificate of Adult Vocational Training). The instructors in the other two trades are expected to be given accreditation in the near future. This training is accompanied by a promotion to OP1, and a further promotion can be obtained by attending courses outside working hours given by a dozen or so senior staff from the Research and Methods Offices. These courses lead up to the CAP, BP and BTS and CNAM¹ training; these latter courses are free. When a candidate succeeds in obtaining one of these diplomas or a CNAM half-unit he receives a rise but his grade remains unchanged.

Except for the PEGs at the CFA and some PETTs, the teachers or instructors, whether they be full-time or brought in to deal with particular topics in the programme, are all production staff (design office or construction). When the CET became a CFA four PETPs resumed their initial grades.

Despite the apparent similarity between CETs, CFAs, CFPAs and adult training, i.e. accredited teachers and approved training streams, the teachers and instructors are of a very different type. The differences are apparent in their recruitment, their training and their status. This brings us to the question of teaching methods and techniques.

3. Teaching objectives and orientations: sheet-metal working

Although sheet-metal working has an unfavourable image² amongst parents (with the exception of sheet-metal workers themselves), students and often even amongst CES teachers, the attitude of the "professionals" (PTEP's, AFPA instructors) is more favourable. This is bound up with the nature of the speciality and the training for it.

1. Conservatoire National des Arts et Métiers, Paris (National Conservatory of Arts and Crafts), which provides continuing training leading to an engineer's degree.
2. The image of a dirty, noisy, dangerous and somewhat antiquated trade.

(a) *The importance of general education.* The speciality requires a certain capacity for abstract thought (tracing) and a "feel" for materials. For this, one needs to be able to perceive a volume in two dimensions at once, which entails a series of operations, i.e. (1) abstraction: the reading of a plan or blue-print; (2) converting this abstraction into reality or into the thickness of the metal: tracing ("A good tracer has to be a sheet-metal worker; if he has not got the feel for the thickness of a sheet, he will make mistakes"—"the feel" for the metal-sheet is as much an abstract as a concrete operation); (3) cutting, bending and sometimes welding to produce a spatial volume. These are all things which require imagination, intelligence, tactile perception and skill.¹ Thus, this negative attitude makes initiation to this trade even more difficult and the results of the training even more uncertain. We have seen that tracing is a decisive factor—CET students who do not make the grade are switched to welding after their first year of common-core subjects.

The AFPA operates in a similar manner, applying a minimum standard for initial recruitment. It is because of these requirements that the CAP sheet-metal working syllabus puts considerable emphasis on general education (French and mathematics) and technical subjects (engineering drawing, art, etc.). The CETs are very keen to expand the theoretical training—they regard this as vital for the exercise of the trade and subsequent promotion since the trade itself requires skills and provides opportunities for such advancement. In one CET, for instance, after obtaining their CAP in sheet-metal working, 5 per cent continue their studies in a *lycée* in the second TS and 10 per cent go on to take a second CAP. The same is true for the other CETs surveyed. Despite the criticism which this arouses amongst certain "professionals" (i.e. on the irrelevance of a given theoretical subject) the teachers and those in charge regard this as an essential part of a CET's educational role and one of the key features in their uniqueness, notwithstanding such internal or external objections.

(b) *The values and limitations of the "practical" training.* Theoretical training cannot therefore be regarded as superfluous, even in the case of sheet-metal working. General and technical instruction are thus factors in the acquisition of the manual skills and operations in a workshop—there is no dichotomy or juxtaposition. In theory, the value of the training provided by a CET results from the combination of these two types of instruction and their interaction.² This implies the existence of an educational team and a common purpose. This at least is what one of the CETs surveyed is trying to create. This CET has endeavoured to form a "learning community" by setting up a team of teachers to assess teaching objectives and methods and a team of students for

1. We have no wish to paint too idealistic a picture. What we are saying refers to the trade *per se* and not the technico-social space in which it is practised.
2. This has been helped by the parity, which did not always exist, between the status of a PEG, PETT and a PTEP.

each level (e.g. Level V) including adults undergoing training.¹ The aim is not the acquisition of knowledge but a form of "education by consent" which determines the student's "pattern of advancement" in every subject. The student's consent and an ability to communicate are essential in a system such as this. Take mechanical engineering for example—the topic for practical work is Joule's Law: the teacher defines the task and explains how this is to be achieved; the students divide up into teams of 4 or 5 and head for the documentation centre; then, with their cassettes and slides, they install themselves in the audio-visual (or so-called "self-training") centre. At the end of the operation, the team summarises its findings and, together with the teacher, submits these to a methodological analysis. In this way, general, theoretical and practical training combine to achieve the objective.

Generally speaking, the CETs have problems with regard to training. One must also bear in mind the lack of professional and practical experience of the new PTEPs (BTS, etc.), from which the above-mentioned CET is not exempt. Added to this is the lack of teaching equipment: three out of the five CETs surveyed are *under-equipped* in terms of machines (from the point of view both of quantity and capacity²) and are short of work materials.

The result is that the number of practical workshop exercises are cut down and tools and products are on a *miniature scale*. The sheet-metal used is never thicker than 2-4 mm and the operations done are more akin to coachwork than to sheet-metal work. As a result, it is a far cry from the materials and machines used in sheet-metal working industries. Sometimes however, various sub-contracting assignments provide the opportunity to work on projects of an industrial character (a project which one cannot afford to "bungle").

(c). *Adult professional training (FPA)*. The teaching methods applied by the AFPA are a reflection of its somewhat unusual position.

The AFPA provides "trade-oriented instruction", i.e. the mastery of the essential elements of a trade within the shortest possible time and an insight into the human and technical potentialities of this "trade" and vital to it. The fact that the courses are of short duration is not regarded as an obstacle: "Where training is concerned, one has to speak in terms of hours not years" —a course in sheet-metal working lasts 1200 hours. The workshops are better equipped in terms of machinery and materials to provide such training than are most of the CETs. The training comprises 5 hours of engineering drawing, 24 hours of technology, and 29 hours of practical work. Although there is less theory than in a CET, it is not overlooked: "It covers everything that is required in the trade".³ From this point of view, it would be absurd to contrast theoretical and practical training or equate practical instruction with

1. The professionals accuse the education system of not inculcating a "team spirit" in their students. But what do they mean by that?
2. Cutting and bending machines which cannot cope with sheets thicker than 4 mm.
3. Many former Level V trainees have subsequently become engineering draughtsmen.

utilitarian instruction: "The AFPA teaches the theory but only from the point of view of its practical applications".

The certificate or diploma awarded at the end of the course (CFPA) is based on the same logic. The object is not to determine whether a programme has been assimilated but to test a trainee's ability to make something (e.g. a hopper), using the blueprint and materials provided (4 mm) and within a stated time. The test itself as well as the item produced very closely resemble a task carried out in industrial conditions. There are two reasons for this: firstly, to prepare the trainee for the type of work he will be called upon to do in industry and, secondly, to give him a liking for the trade, which implies that one does not ask him to work on "gadgets" or miniature objects.

The educational philosophy of the AFPA has a certain number of features in common with trade/guild apprenticeship. The trainees (15 per section) receive what almost amounts to individual instruction throughout the 1200 hours covering a period of $6\frac{1}{2}$ or 8 months. The instructor is keen and has experience in the trade as well as the ability to explain the underlying theory—he in no way resembles the PTEP recruited from a *lycée*. His students already have a certain maturity and some are very eager to learn. The instructor (or "master craftsman") sees knowledge as deriving, not from general education, but from acquired experience which in turn comes from practice of the trade. He regards this "professional experience" as the essence of knowledge (the Germans would term it *Bildung*).

However, only a limited amount of time is spent with the instructor. The trainee, who generally has little general education—will he have sufficient time to acquire this "knowledge" derived from the learning of a trade and will he subsequently be able to make use of it? There are at least two reasons for being somewhat sceptical about this.

The first concerns the aims of the AFPA. Most of the AFPA's trainees are unemployed, i.e. people without any real professional qualification and, in the case of sheet-metal workers more than welders, with a low standard of education. How is it possible in the space of 8 months to give them, as they claim, a profound liking for the trade? This might be the objective and the intention, but one is forced to admit—as even the instructors do—that there is an inherent contradiction in this. As we have already pointed out, this is a substitute form of training and, in view of this, it is difficult with most of the trainees to achieve the avowed (or desired) educational objective.

The second reason arises from what is an apparent contradiction. As has just been said, there is every likelihood that the conditions in which the trainees will find themselves once they have finished their course will not be similar to those of a trade-guild apprenticeship nor conducive to the acquisition of knowledge through the exercise of their trade. The instructors are well aware of this and deplore the fact, but is it however certain that the training for a "trade" of the kind provided by the AFPA is so much at variance with the conception and division of work in industry?

4. *Teaching objectives and orientations: welders*

This section will be much more brief, since many of the foregoing comments with regard to sheet-metal workers in the various training streams also apply to welders. However, because of the specific features of the welder's speciality as this is currently applied in industry, the emphasis is different and this alters or increases the importance of each stream.

(a). *Training in schools.* The aspects which are similar are as follows:

- the recruitment and training of teachers;
- the age and scholastic standard of the students;
- the existence of general and technical instruction;
- the difficulties of CETs with regard to technical equipment.

The similarity is however more apparent than real—the lower scholastic standard and the negative form of selection make general and technical instruction more difficult, particularly since there appears to be no need or reason for it in the case of welders as there is in the case of sheet-metal workers, especially in connection with tracing. Moreover, the technique of welding, which is constantly evolving, is becoming more complex and diverse. Nowadays in many applications welding of a high quality is required and sophisticated methods of control are used, e.g. by X-ray photography. Thus, the welder himself no longer carries out the control function and he is not required to analyse the results of his work, which further reduces the need for general and technical instruction. Because of this technological advance and the expense involved, the CETs find that they cannot equip themselves with these new welding processes and the necessary control equipment or, at least, only on a very restricted scale. This applies, for example, to argon welding, which in fact is not included in the CAP programme.¹

The absence of recent techniques from the syllabus is aggravated by the absence of any retraining schemes for older PTEPs and by the arrival of PTEPs with a BTS or DUT diploma. The latter are certainly familiar with the new methods but do not have the welder's "knack".

However, there are various types of welding and not every industry or employer uses argon welding and probably only arc or gas-arc welding, for example. In certain cases the special skills required by individual employers can only be acquired within their particular industry or, at best, as a form of continuing training but certainly not in a CAP course. The reason for this is apparently simple: a welder's qualification, his speciality, i.e. his market value depends on his "deftness", which can be gained only by experience.

This is why the school belonging to Firm No. 6 has no welding section in its CET/CFA, since it prefers that welding should be taught as part of its continuing training programme or its own "employment-training agreements". In this connection, it should be mentioned that the firm has been

1. These comments do not apply to continuing training courses or extended induction training, where certain CETs use some of these techniques.

given an accredited status for welding which means that it can award the equivalent of a CFPA at the end of the course.

(b). *Adult professional training (FPA)*. The case of this company school shows that adults can receive training in places other than the CETs and the AFPA. The latter, however, is an important centre for training welders in the region, both in terms of the numbers who enrol and the use made of it by employers.

We shall not be including in our analysis the recently created atomic welding section (oxygen, carbon-arc, and basic electrode welding) which concerns companies, of which there are few in the region, belonging to the "Centre de Hautes Soudures" (Advanced Welding Centre). On the other hand, the centre surveyed has closed its elementary arc-welding sections, leaving only the gas-arc and arc-welding sections. After a 6½ month course, trainees in this last category are expected to attain Level 2 (professional classification), i.e. 4 per cent of faults in welding in "all positions".¹

In view of the trainee welders' low scholastic standard, the theoretical training is designed to impart the essential minimum, e.g. the ability to read a plan. Most of the training is concerned with the practical aspect. The AFPA trainee, after 1100 hours carrying out a vast number of practical exercises, repeating the same operations and having these analysed by the instructor, acquires the welder's "knack". The emphasis therefore is on developing the trainee-welder's operative skill.

(c). *The educational implications of the different forms of training and their hierarchy*. Whereas the sheet-metal worker has the possibility both of using his knowledge in other fields and of career development (e.g. he can become a tracer or get a job in a design office, etc.) no such opportunities exist for a welder. There are two main reasons for this.

The first is the welder's educational background, about which sufficient has already been said. The second is bound up with the technique of welding and its place in the organisation or division of work. Welding is more a skill and a function than a "trade". For these two reasons, general and technical education becomes, for the welder, a form of training which is not linked with either his work or his skills. It is regarded as being superfluous—something which the education system feels duty-bound to provide—and industry criticises it as a waste of time and a diversion from the main task of acquiring a thorough manual skill.

Is the fact that a welder cannot use his knowledge in other areas the fault of the educational system? This is a question we shall be dealing with later. There is still the problem of devising a method of training welders, with which all of the teachers are faced. The method adopted by the AFPA, geared to the type of trainees it has, provides them with a precise operational status and a

1. Initial classification: P. 1.

skill which will perhaps set them on the road of horizontal promotion which we referred to earlier. In view of the opportunities for job mobility, (e.g. temporary staff agencies, sub-contractors, oil-rigs) and as the result of becoming highly specialised, some welders may even acquire a certain independence *vis-à-vis* their employer (even to the extent of dictating their own terms) and horizontal promotion at least until their performance begins to fall off at the age of 40.

The system of training is not such as to make a welder capable of solving a welding problem or inventing a new "skill". What is more, the best instructors are in sheet-metal working. Welding requires gestures of a mechanical accuracy, which means considerable steadiness of hand and eye. A weld is either good or bad and, with modern technology, the welder cannot judge this himself—others do it for him with their X-ray photography. Youngsters in the 14-17 age bracket, who are less strongly motivated than their elders, find such demands and constraints difficult to observe and accept.

Scholastic standard, professional training, the evolution of technologies—educationally, it would seem to be a total stalemate, and beyond this lies the promotional stalemate. On the one hand, the welder, the operative, the "knack" without the knowledge, and on the other the engineer, research, analysis, instruction rather than construction.

Is this the result of faulty logic or an operational or organisational *impasse*? It is not our intent to try and provide the answer, even if this were possible. But in order to understand what will be said later, we will add one further comment: in the words of a teacher, "Welding is a tough job. The fellow has to work with special goggles and with a 40 cm rod he has to fix and fuse metal where the temperature over 1 cm² reaches 3000 °C. If he doesn't gauge the nature of the metal correctly, if he gets het up, he'll end up making a hole in the metal. What is more, he has to weld in all positions—standing up, lying down, squatting... Knowing what makes a good weld requires *intelligence*,¹ skill requires intelligence: he has no machine to help him in measuring and adjusting; a fraction of a second too much and you've got a hole in the metal".

An instructor, a member of the teaching team we referred to earlier, added a further comment: "Welders must be able to *analyse*¹ a certain number of things: special alloys and secondary materials, which means knowing about the dangerous gases which enter into the composition of such metals. For a long time, technical education has meant acquiring a "*knack*", just as in the firm training has meant *adapting to a particular job*".¹

1. Our italics.

IV. The various ways in which initial training is used and recognised

Chapter III has served to show that initial training, even for the same level (Ministry of Education, Level V) is not a uniform category; i.e., the same level covers dissimilar forms of training. The question therefore is not merely one of the supply of the qualification, or even one of the supply of an officially recognised qualification (i.e., one accredited by a diploma which would confer on it a universally recognised status)—the question of the supply of the qualification often amounts in fact to that of the conditions which have given rise to it, namely, the streams or avenues by which dissimilar processes of training (CET, CFA, FPA) and the teaching establishments themselves operate to specify the supply of the qualification. Although it is, in one respect, specified to a large extent, this supply of the qualification also masks a considerable lack of precision under the blanket of a diploma.

These two elements (teaching establishments and types of training) affect the ostensible value of the diploma and result in a *perceptible* grading of the supply of this qualification, particularly since this occurs in a very narrow and fairly immobile labour market. Moreover, the unfavourable rating given to these types of training *and* jobs produces a differentiation of tasks and specialities which makes them even more subordinate and remote from the others.

Consequently, the specific nature of the types of training conceals a considerable lack of precision which will be revealed by the system of production in general and by the employer in particular.

A. The way initial training is classified in the levels defined by the Ministry of Education and by the Joint National Agreement for the Metallurgical Industry

We list below the types of training and equivalent diplomas classified in Level V as defined by the Ministry of Education in a circular dated 11 July 1967.

<i>Type of training</i>	<i>Diploma</i>
CET (2 and 3 years)	CAP-BEP
CFA (2 years)	CAP or without
AFPA (6-8 months)	CFPA
Agreements (6-10 months)	BP or without

The national agreement governing the metallurgical industry, a joint agreement between employers and unions, which was signed on 21 July 1975, reclassified all the worker and ETDAM categories. Here we shall be examining only the classifications which correspond to Level V (Min. of Ed.) and to the "intake classification for holders of vocational diplomas".

The principle underlying this new classification is set forth in the preamble: "The definitions of levels¹ are based on a identical conception involving four criteria (freedom of action, level of responsibility, tasks performed, knowledge required)".

By "knowledge required" is meant the knowledge corresponding to one of the "levels of training defined by the statutory texts." The preamble states that such knowledge "may be acquired either through formal education or through an *equivalent form of training* or through professional experience". The equivalent forms of training are those listed in the Ministry of Education's Level V. On this point therefore the system of education and the system of production see eye to eye—which amounts to saying that the Ministry of Education seems to admit that streams shorter than its own can, in certain cases which it is not up to the Ministry to define, constitute types of training which are better suited to industry's needs and to certain job requirements. By the same token, the Ministry is admitting that youngsters who have not followed the long route match these requirements just as well as those with a CAP. By introducing this equivalence, the Ministry of Education is recognising the diversity of industry's needs and the impossibility of achieving a genuine correlation between these needs and its various types of training, thereby allowing free rein to market forces and permitting considerable freedom of choice.

This too is obviously the way the Joint Agreement understands this when it refers to the "statutory texts" or, more specifically, to the Ministry of Education's circular of 11 July 1967.

However, the agreement places a limit on this freedom of the market. It provides a double guarantee to the holder of a diploma acquired prior to his being assigned to a position within a firm—at the end of either his initial professional training or a course of further professional training:

1. He should be assigned to a post which corresponds to the *speciality* of the diploma he has obtained.

1. Not to be confused with the Ministry of Education's "levels" of training. The Joint Agreement defines three levels in the worker category, each of which is subdivided into 3 grades and each grade given a coefficient.

2. The job should be on a level of the "*intake classification*" corresponding to this diploma.

Details of this "intake classification" for a youngster with a diploma or with a training corresponding to Ministry of Education Level V and Vb are as follows—this is Level II¹ of the new scale, which comprises two grades.

Grade P1 is described as (we quote the agreement):

"... carrying out:

- either the traditional operations of a trade as dictated by technical requirements...;
- or, by hand or by machine, a series of tasks involving some form of difficulty either because of their nature (e.g. requiring considerable *manual dexterity*,² the number of operations carried out or equipment used), or because of the variety of operating procedures (of 03 level) generally employed... The job instructions, either written or oral, describe the operations to be carried out or the standard operating procedures to be applied. These may *if necessary*² be illustrated by drawings, diagrams or other technical documents".

The text specifies in a note:

"Manual dexterity consists in the ease, skill and rapidity with which eyesight or other senses are co-ordinated with motor activity; it is judged by the quality and precision of the work performed".

We have italicised the two terms in this text which indicate that the grade P1 more or less corresponds with the function of welder, particularly in view of what is said in the note.

On the other hand, the sheet-metal worker's function is closer to grade P2:

"The work involves carrying out the operations of a trade *in sequence*² in relation to the end result required...

The operations to be carried out are specified in the job instructions, supported by diagrams, *sketches*, *plans*² drawings or other technical documents..."

It will be noticed that in the first paragraph the words "in sequence" have been added and in paragraph 2 the words "if necessary" have been left out and the words "sketches, plans" added. These differences are indicative of a task which is carried out in stages and requires a certain amount of time plus *basic* familiarity with the concepts of descriptive geometry. The description fits the sheet-metal worker closely but we do not know of any sheet-metal worker with one of the relevant diplomas who has been classified in this grade. On the other hand, it is not exceptional to find welders this grade. However, these exceptions are not contrary to the agreement, which lays down two conditions for such a classification: (1) that the "functions" which the holder

1. Level I comprises individuals without training, divided into grades from O1 to O3 (e.g. semi-skilled and unskilled workers).

2. Our italics.

of a diploma "should assume" should be "*available*";¹ and (2) "on condition that at the end of a *period of adaptation*¹ he (the diploma-holder) has proved that he has the desired capabilities" (Art. 6).

Thus the wide variety of training processes is taken into account whilst, at the same time, the agreement acknowledges the different ways in which a diploma may be recognised and the different uses to which training may be put. This apparent precision conceals a considerable lack of definition which allows the employer scope for interpreting and making his own decision when assigning a person to a function or to a grade, and this may derive from whatever is non-formal in the content of the training and the division of labour or, alternatively, from the employer's non-formal assessment of the training, the diploma itself and the job function.

This is what we shall now be attempting to determine by examining these various aspects as we encountered them in the firms surveyed.

B. The different use or recognition by employers of initial training

This flexibility or scope for interpretation is encountered in the first place in those recruitment procedures which are of general application.

Whatever his diploma or his initial training, the young recruit is given a trial period of 2 to 3 weeks during which he is expected to prove his ability. This is followed by a 3- to 6-month contract, at the end of which he is given a contract for an indefinite period.

During this trial period the young recruit is generally given the lowest intake classification corresponding to his diploma (if he has one); or, if he has had a previous employment, he keeps the grade mentioned on his last pay-slip. At the end of the trial period, the worker is taken on at his intake grade provided his trial period was satisfactory—if not, he is either not taken on or downgraded.

We shall see later how these recruitment procedures vary for the different trades. However, two general points need to be mentioned at the outset.

First, the purpose of the trial period is not only to evaluate the newcomer's professional ability but also—and equally important—to assess his motivation. For this, two factors are taken into account: his record of absenteeism and his "ability to get on with other people". Second, the following question was asked in the survey: "If you were about to hire workers, what criteria—aside from the trial period—would you use? (rate in order of importance from 1 to 6): Age—Training in a CET—Apprenticeship training—FPA training—Previous professional experience—Other...". Because of the widely different weight given to each of these criteria, we will consider only the most significant factors involved.

Undoubtedly in first place is professional experience, followed some way

1. Our italics.

behind in second place by training in a CET and, in last place, by age. This would seem to suggest the following conclusions:

- firstly, that professional experience takes precedence over a diploma (of Level V);
- secondly, that CET training, which in most cases leads to a diploma, is rated more highly than any other;
- thirdly, that preference is for CET training combined with two or three years' professional experience.

Note how contradictory this attitude is: no employer apparently wants to be the one to give a person his first job—they all want to reap the fruits of the experience gained by the worker since the time he left the CET (or whatever). This, of course, is a logical impossibility and someone has to "take the plunge" and "bear the cost" of providing the practical experience. By doing this, he runs the risk that his employee may be hired away by a competitor or by a temporary employment agency—particularly if he has been rash enough to provide further training for his newly recruited workers. The fear, which is not unfounded, that this may occur acts as a brake on the development of further education—particularly that which is of a high standard.

In fact, this attitude is understandable only in so far as it reflects the gap between initial training and employment—a gap which we shall be referring to later—and the expressed need therefore for such training.

In conclusion, these two basic features lead to an *overdetermination*¹ on the one hand of the professional qualification by the emphasis placed on "*motivation*" and, on the other hand, of the diploma by the emphasis on "*previous professional experience*".

Our next task is to examine the specific effects of these basic features in the case of each of the two trades.

C. The "semi-protected" status of the CAP in sheet-metal working

1. *The positive value and negative origin of the diploma*

The success rate in the sheet-metal working CAP in 1975 in the Bouches-du-Rhône was 33.8 per cent.² Employers tend to have a high regard for those who have their CAP, because it means that they have certain aptitudes—such as those required for tracing. Nevertheless, it has to be admitted that its positive rating is to a large extent due to its double negative origin:

- the high failure rate at the examination, i.e. almost two-thirds of the candidates;

1. In the linguistic sense of the term, i.e. "to restrict the meaning of a text by a context" (Robert).

2. A percentage which can vary greatly from one year to the next. Source: "Enquête sur l'insertion professionnelle d'une promotion de jeunes sortis des CET 1972-1975", SAIO-ONISEP, June 1977.

- the high wastage rate due to the reasons already mentioned: 71.6 per cent of students not obtaining a diploma out of a cohort of 3 years (the 1st year being common to other specialities). This percentage of non-graduates includes: the unlucky third-year candidates and those who leave during their first or second year, either to join another section, take a CPA course or start work as soon as they reach the age of 16.

These two factors mean that a certain skill status is *ipso facto* conferred upon the successful graduate, who generally has little difficulty in getting a job in his trade. In addition, according to the Ministry of Education's SEIS survey,¹ 4.9 per cent of students continue their studies beyond the three years, either in 2nd TS or for a second CAP. Since this survey dealt with students leaving a CET with or without the diploma, this percentage figure would have to be scaled up accordingly to obtain a truer picture of the proportion prolonging their formal training.² In comparison, the rate for welders was 0.3 per cent. On the other hand, based on the information provided by our own survey, only about 30 per cent of non-graduates are likely to find a job in their speciality, and this figure is probably higher in the case of welders.

Based on these figures, it would seem that, as far as graduates are concerned, their professional status is relatively well protected.

However, based on our interviews with employers, this statement needs some qualification.

2. Employers' attitude to initial training

When hiring sheet-metal workers straight from their initial training, employers have a marked preference for those from a CET rather than those from an FPA.

As far as recruits from a CET are concerned, a distinction has to be made between those who have a CAP and those who do not.

Although the welder is not often required to undergo a trial period, since the result is known in advance, the sheet-metal worker systematically undergoes a trial period. In the case of Firm No. 5 the probationary period varies depending on whether the recruit has a CAP or not—take for example the two systems applied in the case of persons hired for the assembly shop: the one with a CAP will spend two weeks welding, after which he will be transferred to accessories (mounting flanges on a 30-tonne tube), then to mounting collars, and from that to heavy assembly on units weighing 200 tonnes. The probationary period lasts 6 months. The system of probation is quite different in the case of someone who does not have a CAP. There is some doubt as to what job he should be given: should he be trained as a fitter or as a welder—which, in the latter case, would mean ignoring his training?

1. Survey on the "Placement des élèves de l'enseignement technique sortis à la fin de l'année 1973-74": Document No. 45 78-Oct. 75 by the Service des Etudes Informatiques et Statistiques (SEIS).
2. Repeating rate: 1.5 per cent (*ibid.*).

The decision is taken at the end of an 18-month trial period during which he will work first as an assistant fitter and then as a tacker, a job involving 30 per cent welding.

In contrast to this, the person who has a CAP in sheet-metal working will never be made a welder.

Three of the firms surveyed, although they stated that classification was on the basis of qualification rather than the diploma, declared that they preferred to recruit those with a CAP "because, after all, they do turn out to be some of our best workers".

The three other firms have a paradoxical attitude towards holders of a CAP.

The first firm regarded the CAP as "almost completely unutilisable"—age and education were the last criteria to be taken into account. In the opinion of this employer, theoretical training was possible and necessary only after the age of 17, otherwise it could lead only to dislike and incomprehension. It in fact produced a mistakenly abstract impression, "in contrast, if not in conflict, with actual working conditions". This abstraction was bad because it encouraged the person to relate "the matter to the abstraction and not the abstraction to the matter". In other words, the training a student received did not enable him to understand and solve the practical problems encountered by a sheet-metal worker—his approach to a practical problem would be based on theoretical principles and ideas acquired at his CET, with the danger that he would apply a theory which was not relevant instead of understanding the principles governing "the matter" and deducing from these the theories applying to its operation or to its state. This was the deductive approach as used in CETs. As a result, the firm preferred FPA-trained sheet-metal workers, some of whom could subsequently become technicians.

The best amongst those with a CAP would not begin to "surface" until they were over 25—in other words, when they had unlearned the method taught in a CET.

Contradiction? One might well think so: two-thirds of the workers in this firm under 35 have a CAP.

In the second firm those with a CAP are mainly in the under-30 age-group. But 80 per cent of the young workers recruited over the last five years do not possess this diploma—under pressure from the shop foreman, the firm now deliberately avoids taking on people with a CAP. As opposed to this, the firm looks for students who have failed their CAP and youngsters serving their apprenticeship (CFA). These recruits are then taken in hand by the supervisory staff and the firm enters them for the CAP, where their results are good. Thus, not only do these youngsters obtain a better qualification but they are "more flexible, more disciplined and more amenable" than CET graduates.

Contradiction? The firm is somewhat afraid that it might end up with more submissive but less skilled workers.

As for the third firm, until 1977 it had its own CET and a 92 per cent success rate at the CAP.¹ Since changing its status for that of a CFA, it has been able to provide more and better training in the form of sandwich courses, at a lower cost and covering a shorter period. At the same time, a twin system of training was set up: "adult training" and "the employment-training agreement". It should be remembered that these two cycles (8-14 months each) can lead to professional diplomas as well as to "higher training". As a result, initial training of the CET type now takes second place to CFA-type training, which in turn has to compete with a form of continuing education which is *more flexible* and less costly.

To sum up: there are many reservations and much criticism of both the theoretical and practical training which a CAP student receives at a CET. It would appear however that some of this is contradictory, that several firms prefer those who have a CAP and that these are all hired in their particular trade.

3. Internal and external mobility

Although he is often belittled, the person who has acquired his CAP at a CET is nevertheless regarded as having a more receptive outlook and a greater capacity for analysis than those without this diploma. No doubt, he will be more lost to start with than an apprentice² or a worker without formal training but with professional experience. However, he will subsequently overtake them as he will overtake the non-graduate: "The fellow leaving a CET with his CAP will need 3 or 4 years before he really settles down. However, he knows what he's doing, whereas for the others it's more a question of following a routine" (Foreman, Firm No. 5).

Once he has learnt the fundamentals of tracing in his CET the CAP graduate (particularly if he gets some further training) will eventually be able to get a job in the design office or as a foreman or supervisor.³ By the same token, he has an external mobility, i.e. the possibility of a better job in another firm. As we have seen, this is a factor which discourages continuing education.

A relatively recent *development* has somewhat reduced the possibilities of someone with a CAP getting a job in a design office and restricted the scope of the work he performs. This development depends on the size of the firm and the changes occurring in its markets, which oblige it to manufacture new and more complex types of product. This means setting up a research and methods department to cope with the advanced technology involved, which

1. Partly due to a strict selection procedure—the less gifted students had to make do with the nearest public CET.
2. For this reason some firms prefer to recruit someone from a CFA who has his CAP, because he can adapt to the work more readily. The real test is to compare his career development with that of someone who has obtained his CAP at a CET.
3. In one firm, the P3s have charge of 2 assistants with a P1 grade.

results in a *division of labour* hitherto unknown in such medium-size firms and the hiring of technicians with a BTS or DUT diploma. These technicians are familiar with the new methods of work and planning but, because they lack practical workshop experience, they have difficulty in communicating with the workers on the shop floor. This had not been the case with a draughtsman who had come from the workshop: "he knew everything from A to Z, he knew what was possible and what wasn't". This type of person, who copes easily with a task involving several operations, feels frustrated when he has only one single operation to deal with.

The presence of BTS and DUT graduates may, in some firms, lead to a superimposed division of labour because of their "unsatisfactory" qualification in technical drawing. The head of one design office was of the opinion that "the teachers of technical drawing have had probably no or very little practical training". In his view, the BTS approach to design analysis was "an analysis of functions rather than the creation of a need. Whence the problem of one-off production of a single item, i.e. how should this be designed—should not a firm of engineering consultants be brought in to do this?" The present trend is for small and medium-sized firms to eliminate their own planning and design function and give this work to outside services; the BTS and DUT graduates are then put in charge of methods, i.e. application and execution by the workshop. Although the larger firms have been using this system for some time, its recent adoption by small and medium-sized firms tends to restrict the occupational mobility of sheet-metal workers, particularly those with a diploma.

This analysis therefore justifies out use of the term "semi-protected" to describe the status of the sheet-metal working CAP.

D. The "de-protected" status of the welding CAP

We used the term "semi-protected" to describe the status of the sheet-metal working CAP; we also saw that the sheet-metal worker without a diploma, although he did not have the same advantages as someone with a diploma, could, as a result of what he had learnt at his CET (particularly with regard to tracing), expect to have a relatively good career pattern. In particular, in the two firms which are somewhat anti-diplomas, they compete with those who have a CAP—at least until the firm enters them for the CAP exam.

The same does not apply in the case of welders: whether or not they have passed their CAP, the position of CET students is identical—neither the training received nor the diploma affords them any kind of protection.

Aside from its high wastage rate, the welding section is noted for its low success rate in the CAP: 44.7 per cent in the Bouches-du-Rhône for the year 1975 (v. 33.8 per cent in sheet-metal working). According to the SEIS survey already quoted, only 0.3 per cent of those leaving CETs in 1974, with or

without a CAP, continued their studies (v. 4.9 per cent in sheet-metal working). This is an indication of the qualified welder's low mobility.

1. Recruitment and internal mobility

Welding provides a glaring example of the gap between initial training in a CET and the requirements of industry.

From the similar comments made by all of the employers interviewed, it would seem that the CET training given to welders is totally divorced from real conditions in industry: "At the CET they learn an easy form of welding which is not used in industry. For example, basic electrode welding—which is 90 per cent of the welding done in a workshop—and stainless steel welding are not dealt with at a CET. The welding CAP is more divorced from reality than the sheet-metal working CAP, because welding is more complex. Few CET teachers are really familiar with the different methods in the way that teachers in sheet-metal working know their subject, because welding changes so rapidly, whereas in tracing the basis remains the same" (Welding engineer, Firm No. 5).

Two different recruitment procedures are used:

1. Recruitment of FPA trainees. Like the others, they are given a two-hour test—to which however little importance is attached. The firms which provide examiners for the CFPA pick the best. There is no need to repeat the reasons why employers recruit FPA trainees. However, they represent only a small proportion of the welders hired. Many end up working for temporary employment agencies and sub-contracting firms.
2. The rest are hired without regard for their initial training. In this case, they are selected from the list of job-seekers at the ANPE (Agence Nationale Pour l'Emploi—National Employment Agency)—this acts as a form of initial screening. One firm selects those who are aged 22-23 "who haven't made a good beginning to their career and who want to make a fresh start. As a result, they are more highly motivated than those coming directly from a CET". In this particular firm, the preliminary welding test lasts 2 hours and 80 per cent of the candidates are eliminated at this stage.

Firm No. 5, when it has decided whom it will recruit, sends them to a welding school (which it organises itself) which lasts 15 days, after which they spend several months working as "tackers". The best "tackers" become "junior welders", but this process is a slow one due to the increasingly technical nature of the operations involved.

The situation with regard to Firm No. 6, which is a somewhat special case since it has its own CFA (previously a CET), bears out what has been said above. Its CFA does not have a welding section. This is not due either to a lack of facilities or to a lack of finance; it is simply that formal training with its hours of general education seems both unnecessary and expensive and the students too young to cope with the operations required for welding "in all positions". For these reasons, the firm prefers to recruit youngsters of 16 or

17 and train its own welders by means of short courses of the "Adult Training" or "Employment-Training Agreement" type (cf. above), for which it has accredited instructors in welding only—which means that it can award the CFPA's welder's certificate. This system has the advantage of being less expensive and of providing intensive training in real conditions *in situ*.

All the firms interviewed in this intensive survey make a point of training their own welders—these courses are organised within the firm either with the aid of ASFEM¹ or by the supervisory staff, depending on the size of the company or the technology involved.

Initial training and the CAP do not themselves provide any protection or any guarantee of employment and promotion. On the other hand, there is a great demand for qualified welders and their internal mobility is high. We will quote a few figures to illustrate this but without going into great detail, since we have already dealt with this aspect.

In July 1977 one of the five firms, a medium-sized operation, hired a welder at the coefficient 190 (P2) at an hourly wage of F. 16.18, as against F. 15 for a sheet-metal worker with the same qualification. In Firm No. 5 the situation in the production shops (at June 1 1977) was as follows:

<i>Sheet-metal workers</i>		<i>Welders</i>	
12	P3	20	P3
14	P2	30	P2
27	P1	20	P1
27	OS2	4	OS
<hr/>		<hr/>	
80	(20 with CAP)	74	(few or none with CAP)

The OS sheet-metal workers are mostly young recruits.

The figures for sheet-metal workers include workers who perform subsidiary tasks.

The OS welders are tackers.

One notices in this table the higher proportion of P3s amongst welders and the small number of OS—which means that welders generally start at the P1 grade and that more of them move up to the higher P2 and P3 grades. However, several things need to be borne in mind in connection with these grades: the P3 sheet-metal workers often supervise two or three P1s; in addition, the coefficient 215 (P3)² is the ceiling for welders and they will

1. Association pour la Formation et l'Emploi dans la Métallurgie (Association for Training and Employment in the Metallurgical Industry), a trade association whose function is to manage the fund for continuing education (1 per cent of members' turnover) and organise the necessary training courses).

2. 2.15 times the reference wage.

never be given a job involving responsibility (even of a limited kind like some P3 sheet-metal workers or the broader responsibilities of a foreman or supervisor)¹ or change their job for one in a drawing-office or research and methods department. The welder's relatively favourable position is based on his pay scale rather than his rank, and this is the result of a wage escalation due to the lack of qualified welders. Once a welder is over forty, he is in a vulnerable position—particularly on site work. However, until he reaches this critical age, by virtue of his trade and because of the shortage of welders, he has considerable inter-firm mobility and, as we mentioned earlier, in certain cases he may even be able to fix his own scale of pay.

The fact that P3 is the highest grade that a welder can reach, the increasing complexity of welding techniques and methods of control and the arrival on the labour market of persons with a BTS or DUT who have studied at the School of Welding in Paris² have accentuated the *division of labour* and the resulting *compartmentalisation*.

The only possible way of achieving some degree of de-compartmentalisation is for the welder to broaden his skills; e.g., Firm No. 5 encourages any youngster "who is interested to do multiple-process welding".

1. Because of their lack of aptitude for organising work and supervising staff.
2. Ecole Supérieure de Soudure Autogène (ESSA).

Conclusions

In this final section devoted to the conclusions to be drawn from this study we shall be reviewing some of the factors involved in the process of social and organisational interaction in order to determine the relevance of this concept in analysing the training-employment relationship from the angle of workers' qualifications.

We have seen that, although there is a hierarchy of streams (CFA, CET, FPA), these streams themselves are not always uniform: e.g., there are substantial differences between some CETs to the point where one can sometimes detect the influence of a particular school.

The hierarchy of training streams is influenced by the hierarchy of occupations. By this we are not implying that the hierarchy of training streams is entirely conditioned by industry. The concept of qualification in the meaning we have given to it is in fact a process of acquiring knowledge and skills, a process of interaction which includes both the training provided by the system of education and its recognition by the system of production and by the employer in particular.

So when we are analysing the hierarchy of streams and skilled workers' diplomas, our purpose is not to discover and deduce that the CETs correspond more closely than the AFPA to the jobs and "requirements" of sheet-metal working industries or that the CFPA in welding is better than the CAP—it is more a question of whether the *logic* underlying the criteria for recognising streams or diplomas and industry's criteria for promotion does not *also* produce this educational hierarchy and, by so doing, reproduce *its own* hierarchy. But this is by no means all. It is also necessary to take a critical look at the educational system and ask oneself whether the way it differentiates the educational supply and the heterogeneity which it introduces in its types of training and methods *are not the cause* of this categorisation of workers and these sectoral divisions—these two factors being themselves interdependent.

Throughout this study we have constantly attempted to analyse this *two-way process* even if, for the sake of convenience, we have been obliged to treat them separately.

The orientation towards sheet-metal working and welding is, as we have said, a negative one. Several factors combine to strengthen this orientation and the educational supply is primarily focused on trades thought to have more prestige than our three trades at the lower end of this scale of values. Both the school and industry contribute to the establishment of this hierarchy. *The school*—students, parents and teachers—contributes to it by the dichotomy which it introduces between intellectual and manual disciplines and by the preference and prestige it bestows on general and theoretical education. This dichotomy, which is explicit or implicit right from the first years of schooling, takes effect when it comes to orienting students towards the technical streams where most of those from working-class backgrounds go (or are sent).

Industry contributes to this by the image it gives to students (or which they themselves form) of the various trades. We have seen that this image does not reflect very accurately the real situation on the labour market, particularly since it gives greater priority to mechanical engineering than to sheet-metal working, where job opportunities are more numerous. Consequently, one also has to examine this image, this apparent lack of logic. This image is made up of several components: the unpleasantness of the work (noise, dirt and site conditions), the relatively low pay, the limited prospects for promotion, and the high percentage of workers from the Maghreb. At the schools which these nationalities attend¹ the French students and their parents associate their presence with the downgrading of the trade and type of work for which they are being trained—their progress is regarded by the others as a loss of socio-professional standing. However subjective this image may be, there is no doubt that some of its features are borne out by conditions in industry—the fact that welders have no possibility of promotion is just one example of this.

Thus, industry infiltrates the education system *upstream* of the actual training, as it were by a reverse process, and gives a *social dimension to the qualification* which precedes its acquisition.

The school, which is both heir and agent of this negative attitude, accentuates the divisions created between streams and qualifications: at the end of a first year of common core subjects, which all the students have to take, the less gifted are assigned to the following sections and in the following order, depending on their results: mechanical engineering (where such sections exist), sheet-metal working and lastly, welding. Each of the sections has its own programme and its own pattern for developing knowledge and skills; this creates watertight divisions between the types of training and makes it impossible or very difficult to transfer from one to another—nor is such a transfer made any easier by the abstract character of the teaching methods, which

1. In one CET as many as 40 per cent of the students in sheet-metal working and welding were of Maghreb origin.

tend to concentrate on the *deductive approach*. The study of techniques and materials often precedes and is given more emphasis than how to use them. The official CAP programmes often include abstract concepts which the student will not have been able to verify experimentally. When such experimentation does take place, it does not always form part of a coherent learning process and it is sometimes in conflict with the nature or scope of a given problem. It is difficult for the student to make the connection himself, or appreciate the overall dimensions of the subjects he has to deal with. Paradoxically, this kind of experimentation increases the abstraction—take for example the following exam project: putting in miniature elbow bends (using rods) on a pipe assembly. Either the test starts with a detailed diagram and the student finds himself unable to locate this as part of the total unit (difficulties in assembling it, rectifications, etc.); or the test starts with an overall plan and he has to pick out a detailed section and situate the piping in the overall plan—and in this case the student finds he is unable to decide the shape of a pipe from a plan which is in two and sometimes even in three dimensions. This conceptual method of teaching lacks any concrete (dimensional) approach to a structure, followed by the positioning on a plan of the section to be constructed. Other examples from the CAP official programme: applied mathematics (*"Intended Purpose of the Exam"*)—the mathematics examination is intended to enable one to judge whether, on the one hand, the candidate is able to solve the fundamental problems which will confront him in adult life and, on the other hand, whether he possesses the basic notions required to cope with the requirements of his job.

Details of the exam: the mathematics exam may be in two parts: five or six separate questions which will enable one to assess the extent of the candidate's knowledge, his ability to apply this to problems likely to occur in the exercise of his trade... The example chosen appears to be ridiculous but it nevertheless represents an official and widely applied method of instruction, i.e. instead of starting with problems and assessing the candidate's *ability* to solve these, *knowledge* is made the starting point and one tests whether he can apply this to "problems likely to occur in the exercise of his trade". The perfect abstract approach—from two points of view: it puts the emphasis on the extent of *separate* and disconnected forms of knowledge; it acts *as if* there were an exact correlation between theoretical knowledge acquired at school and "the problems likely to occur in the exercise of his trade". Whereas it goes without saying that the miniaturisation of the machines used and the units made at a CET, compared with the problems likely to arise in a workshop or on a work site, create a quite different relationship between theory and application. The deductive approach employed thus proves ineffectual in dealing with and solving such problems.

It proves all the more ineffectual because very often this method is incapable of developing its own logic to the full and achieving the results which it should produce. This is borne out by a statement made by a head of one of the CETs: "The workshop instructors do not make the student remember

the formula he learnt in the general classes: they just give him the answer straight away".

Their deductive method of teaching has other effects similar to the one already mentioned. The CAP programmes are full of expressions such as: "Chemical properties (of metals): basic principles of corrosion"; option "Shipbuilding": the basic theory of ships: (a) review of the principles of Archimedes and Pascal, (b) Basic principles of hull accessories... (c) Basic principles of ships and floating docks..."

An approach of this kind leaves its mark even on the structure of the school, e.g. the breaking-up of general and theoretical instruction into periods of 50 minutes. "When he begins a period, the student knows nothing. If these periods were to be grouped together the student could carry out an individual or group project; over a 3- or 4-hour period he can accomplish something, whereas in the space of 50 minutes he's only got time to discover that he knows nothing" (the head of a private CET). Hence this head's wish that his school could have more freedom in deciding its timetable.

Aside from the consequences already mentioned, the deductive method has other effects which are more general but perhaps more pernicious.

It produces an attitude of failure by constantly keeping a form of knowledge out of the student's reach. This concerns either knowledge where a corner of the veil is lifted and the student told that he does not need to know any more,¹ or knowledge which would be indispensable to him but where the method of approach is so abstract as to make it too difficult for the student and too laborious for the teacher (who prefers simply to provide the result). In view of the students' low scholastic standard, this has the effect of discouraging the less able, accentuating even more their dislike of school, increasing the number of drop-outs and failures and making more difficult the acquisition and recognition of a qualification.

For students with little ability for theoretical analysis—not necessarily inborn, but because they are unaccustomed to this—an inductive approach to problems would be more likely to enable them to grasp the laws and techniques which subsequently could enable them to build up their knowledge, acquire new skills, all-round ability and the possibility of promotion to a higher operative or non-operative grade.

An inductive approach enables one to break away from the scholastic forms. It takes as its starting point the level of knowledge already acquired by the student and reverses the pedagogic sequence. Concepts are no longer abstract but derived from concrete situations; the relationships or connections between properties and induced effects are discovered progressively and tested; the laws of behaviour, action and reaction (e.g. of metals, concrete etc.) and their necessary abstraction are dealt with in the object itself and in its relationship to the subject (i.e. the "professional") as well as in its

1. This is what Grignon calls: "A pedagogy of illusions" in *L'ordre des choses*, Paris, Editions de Minuit, 1971, p. 233

relationship to the physico-chemical, organisational and social environment. This is an approach which is both personalised and social and much more dynamic and forward-looking.

However, we are reluctant to go beyond what has just been said. What we have been describing is a general characteristic—each training establishment has more flexibility in terms of organisation and teaching programmes than this would suggest. What is more, it should be remembered that the CETs analysed earlier have systematised a method of instruction which uses an inductive approach.

The method of instruction used by the AFPA is basically inductive. Part of the reason for this is its objective and the fact that its trainees are older and have few qualifications. The emphasis is on practical work, practical exercises are more frequent and great attention is paid to acquiring the knack. The type of assemblies and the size of the machines used are closer to those encountered in industry. The examination for the CFPA diploma corresponds—as far as this is possible at the end of a 6- to 8-month training—to the conditions in which such work would be done in industry. There is no general training—there would be no time for this in such a short and intensive course—and the theoretical training covers “only what’s necessary, but all that’s necessary” for the proper exercise of the trade. We have in fact seen that this was the case in particular for welding, where AFPA trainees can expect a genuine advancement in their trade’s (limited) hierarchy. On the other hand, sheet-metal workers—except for some exceptional cases—will experience difficulty in attaining posts and categories to which CAP graduates are more often promoted than they. Generally speaking, the AFPA achieves its objective, which is to enable unemployed workers who have no qualifications to get a skilled job, or to provide workers who already have a job with a new trade or further training.

Provided that the worker who has received AFPA training has the ability and the motivation, he will have acquired an intellectual approach which will enable him to develop his skill. However, there is one important limitation: the training provided by the AFPA is specifically oriented to the job functions as defined by the system of production, and this segmentation of tasks sets boundaries and limitations on skills.

Despite their dissimilarity, these two methods of instruction have comparable effects: hierarchies and divisions between trades as a result of compartmentalised programmes and specialisations, a downgrading of some types of training, and a rift between educational levels without creating individual patterns of career development.¹

The system of education and vocational training thus pre-empt the barriers and hierarchies created by the system of production, but for which it is itself partly responsible.

1. With the exception of one CET which has attempted to do this and certain AFPA sections where the number of trainees is small.

CETs and CFAs are caught in a *vice* between the system of education itself and the system of production. They both not only assist but act in conjunction with industry to put a ceiling on workers' qualifications and promotion and to set up barriers between skills and jobs (e.g. operative v. supervisory, manufacturing v. planning).¹

The streams surveyed are in fact given a negative bias *at the outset* by the system of education and, *at the outcome*, by the creation of new technical streams (BTS, DUT). These new streams put prime emphasis on technical-theoretical training rather than technical-experimental training, thereby giving added impetus to the trend towards increasingly higher diplomas obtained within the school system and based on formalised knowledge.

These BTS and DUT graduates, who are products of the school system, have an effect not only on industry but also on the school and on the CETs in particular. Their recent arrival in the teaching profession and in industry has had two opposite or conflicting results.

Firstly, it has accentuated the theoretical aspect of basic training and is in danger of downgrading it in two ways: it reduces the student's experimental ability by increasing the already imprecise nature of the diploma—a lack of precision which will be removed when the person is hired by industry—without however giving him adequate theoretical means and social ability to enable him subsequently to be eligible for planning tasks (Design Office, O. and M. department, etc.) and for positions of responsibility.

Secondly, this tendency² affecting the system of training coincides with the arrival on the job market of these same graduates, who find their way into, and indeed accentuate, the existing division of labour within the system of production.

This produces what is at first sight a surprising *interaction*: a job market considered to be restrictive and protected engages in a competition for higher or additional diplomas, whereas a labour market which is practically non-restrictive and unprotected finds itself involved in a competition to reduce or eliminate diplomas.

This last aspect was mentioned earlier; in other words, both the preference in certain cases for the education system's "failures", who are keen to get out and more motivated than graduates (CAP in sheet-metal working) who are more insistent about their abilities and their rates of pay; and the competition to CET graduates from students from the same CETs who have failed their CAP and whom industry will enter for this diploma after "in-house" training.

1. With however a reservation as far as the CAP in sheet-metal working is concerned.
2. At the moment it can only be called a tendency—the recruitment of BTS and DUT graduates into the teaching profession is too recent and their numbers still too limited to allow one to generalise and draw conclusions which might be unfounded. Furthermore, certain CETs are opposing this tendency and endeavouring to integrate these new graduates within a "learning community" in which the various abilities can combine within the framework of an original teaching project.

It would seem therefore that the *diploma* has two dimensions: the first, formal, denoting a level of knowledge and skill; the second, informal, designating the diploma as a *social production*, generating social effects within industry. These two dimensions are linked together in the recognition or non-recognition of the diploma by industry, although it is not always possible to determine which has the greater influence on recruitment. As we have seen, this ambiguity is implicit in the text of the Joint Agreement governing the metallurgical industry. It confers an imprecision on the recognition of a diploma which conceals the underlying discriminating judgment. Underlying the avowed criteria which determine the use of diplomas and underlying the apparent logic which justifies the definition and allocation of jobs is there not an unavowed illogicality, namely the social division of labour, to which the graduate is supposed to correspond, and the technical qualification which this division is supposed to require?

For these reasons, the diploma, as well as the recognition it receives, are in this study at the junction of the spaces of socialisation and organisation, where the system of education and the system of production link up and where their interdependence is created.

Without denying the burden of technological constraints, increased still further by the development of techniques and costs (new welding processes and the construction of large and more complex assemblies in sheet-metal working), one needs to ask to what extent this is a decisive factor in the organisation of work and in the logic which industry assumes this to have.

An instructor in sheet-metal working made the following comment: "The difficulties which one encounters from all sides stem from the firms themselves, as a result of the division of labour which they apply. For example, a sheet-metal worker/tracer will forget all he ever knew about tracing when he is doing nothing but bending sheet-metal. Another example: a sheet-metal worker was given a rectangle to cut which had been drawn by a design office and marked out for him. This is doubly unproductive because, for one thing, you don't need a design office to mark out a rectangle and, secondly, this openly downgrades and diminishes the sheet-metal worker. A design office is a vicious circle because it divides up the work and de-qualifies the worker."

There is no need to repeat what we said earlier about the part played by the school system in this separation of qualifications and in this division of tasks. Although we would not go so far as to support the opinion expressed by this instructor when he asserts that design offices are unnecessary, he does in fact criticise this *absence of logic* which so often underlies the *division of labour* in industry but which no one cares to admit.

A good illustration of this are those sheet-metal workers and welders sent by their employers to the AFPA for instruction in their basic trade, which they have forgotten. A rebound effect, a *vicious circle* if ever there was one, since the training they will receive will be marked by this downgrading of the qualification or may even take the form of "adaptive training" for a compartmentalised task.

In the case of welding this phenomenon is more marked, although less obvious because of the greater influence of technological factors which, here more than elsewhere, seem to impose their constraints and find a rational justification. Industry defines the welder's function and training very narrowly, whilst the school mirrors this and, in line with its principles of selection and the separation of skills and programmes, limits the welder's training to a single and restricted pattern. Industry, giving as its reason the unquestionable technological imperatives, will resort to hiring welding engineers (BTS or DUT graduates for the most part) to cope with the new technical processes and the new standards of quality control and, at the same time, to offset the shortcomings of its best welders in the area of conception and innovation. In view of which, how is it possible to envisage a system of instruction for welders other than that which consists in acquiring a high degree of "knack", and how can one introduce a polyvalent type of training and what purpose would this serve? Thus, the wheel has come full circle: industry expects the school to provide it with welders who have a definite "knack", knowing full well that this requires a sure hand and eye, which cannot be expected of a youngster 15 to 17 years old.

Thus, industry and the school, finding themselves imprisoned in a circle of their own making, feel that they have been cheated.

Industry, trapped in its own logic, requires a welder who is difficult to find amongst school-leavers and is thus obliged to recruit welders with higher qualifications than those required. As a result, industry prefers to take charge of their training itself—an attitude which aside from being onerous is risky because the welder, trained at great expense, may be tempted to sell his increased ability to a competitor. And in this cost must be included the additional expense of hiring welding engineers and technicians as well as the forgone social and financial gains deriving from the fact that the welder's skill reaches a peak and he becomes unsuitable for certain tasks after the age of 40.

The school also sees itself trapped by the high failure and wastage rates amongst welding students and by the situation in which it finds itself—or in which industry has placed it—where it is unable to provide its students with a training which is likely to give them a broader and recognised social and skill status.

Industry and the school as an institution constitute therefore a field of *negative interaction* where the problem of matching requirements becomes a vicious circle.

Industry endeavours to offset the shortcomings which it accuses formal training of having by attempting to eliminate the gap between school and workshop. It attempts to do this by eliminating—and here we are referring to a trend—one of the two factors causing this gap, i.e. general and theoretical training, and concentrating instead on the learning of a trade on the job—a trade which, needless to say, is restrictive, which reduces the possibilities for polyvalence and the transfer from one trade to another. This applies to

welders in particular. Industry does this by making use of short-term training courses (internal or external) and sometimes by making it a practice to hire non-graduates (CAP). However, the elimination of this gap entails displacement or creation of a new gap, which is certainly more serious than the first. We are referring to the gap between a new category of more qualified staff, i.e. DUT and BTS graduates, and a category which is allowed to become downgraded, i.e. CAP graduates and non-graduates—a new division of labour and a new educational hierarchy which immobilises this latter category in a single profession and in a restricted classification.

The school has several cases which illustrate this. We mentioned the experiment made by one of the CETs which is attempting, in a research project in which several firms are co-operating, to introduce a system of teaching which goes beyond the mere acquisition of manual dexterity as the qualification for a job. There is also the case of the school which refuses any marked dependence on industry, which attempts to safeguard its students from on-the-job training and from a social status, for which in any case they are destined, and which paradoxically accentuates this situation of dependence.

As a result, even though school and industry seem to evolve within their own educational and productive and *technological* space, they continue in fact to create and cultivate their field of social and organisational interaction.

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"... all seems to suggest that employers have standard profiles for various job categories, i.e. profiles which are composed of cognitive and performance elements. Cognitive and ascriptive elements serve to filter those candidates who are the most suited to the jobs, but the final selection and decision to hire are based on performance data or rather on the opinion the employers form of the candidate's qualities... Maximum efficiency is what the employer is looking for: this will be related to education and experience in the case of management and technical staff, to length of service in the case of a foreman, and to state of health, age and police record in the case of an unskilled worker..."

This book, from which the preceding paragraph is taken, aims at improving our understanding of the complex relationship between education and employment. It analyses the recruitment and promotion policies of employers in four different settings, and draws some conclusions for educational planning.

The authors

After having served as 'chargé de mission' in the French Ministry of Finance, and as a lecturer in the Faculty of Law and Economics of the University of Paris, Jacques Hallak has been a staff member of the IIEP for over fourteen years. In that capacity he has directed several research projects, especially in the fields of educational cost analysis and financing, school location, and the relationships between education, work and employment. His numerous books and articles on the problem of educational planning include *The analysis of educational costs and expenditure* (1969), *Managing educational costs* (with P.H. Coombs, 1972), *A qui profite l'école ?* (1974), and *Planning the location of schools: an instrument of educational policy* (1977).

Françoise Caillods, who has been a staff member of the IIEP since 1969, has been associated with research projects on educational financing, school location, and education, work and employment. Her publications include *Educational policy and its financial implications in Tanzania* (with Ta Ngoc Châu, 1975), and she has been co-author of books on population growth and costs of education (1972) and on school location in Costa Rica (1975).

The other contributors are researchers in various investigation centres of Panama, Indonesia, Kenya and France.